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Miss L. Winder

January 14th 1895

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PRACTICAL TREATISE

ON

DIET,

AND ON THE MOST SALUTARY AND AGREEABLE
MEANS OF SUPPORTING LIFE AND HEALTH, BY

ALIMENT AND REGIMEN.

Adapted to the various Circumstances of

AGE, CONSTITUTION, AND CLIMATE;

AND INCLUDING

*The Application of Modern Chemistry to the Culinary
Preparation of Food.*



BY WILLIAM NISBET, M. D.

FELLOW OF THE ROYAL COLLEGE OF SURGEONS, EDINBURGH; AUTHOR
OF THE CLINICAL GUIDE, &c. &c.

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DIET

AND ON THE MOST SALUTARY AND AGREEABLE
MEANS OF IMPROVING LIFE AND HEALTH BY

ALIMENT AND REGIMEN.

A TREATISE ON THE MEDICAL ARTS

AGE, COMPLEXION, AND CLIMATE.

BY WILLIAM WELLS, M.D.

THE SIGNATURE OF THE AUTHOR IS IN THE COPY
OF THE ORIGINAL MANUSCRIPT.

BY WILLIAM WELLS, M.D.

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PREFACE.

THE subject of diet is of the first importance to mankind. It has received, however, from the generality of Physicians, a less share of attention than its importance demands, and the cure of actual disease is commonly more aimed at than its prevention, or the real preservation of health.

Compared with the other branches of the medical art, the works upon diet are few, and of these a very small number can be considered as possessing practical utility. Hence they are little fitted to instruct society at large. Those which do afford practical instruction, consist generally of small detached works on particular subjects; and those which assume a more complete form, are entirely of a professional and scientific nature, and abound in hypothetical, and conjectural matter.

Among

Among the ancient Physicians, diet was considered as a subject of the first consequence. Their remedies were fewer in number than those of the moderns, and they were consequently led to the regulation of diet, as a more successful means of curing disease than the application of medicine. It would have been well for society at present, if the same opinion and practice, were followed by modern Physicians.

Of the advantages attending a proper regulation of diet, most individuals can form a judgment from their own experience. It is at least this idea upon which the common maxim is founded, that every man, after the age of forty, is best fitted to be his own physician; a maxim which implies, in other words, that every man in respect, to what he eats and drinks, is enabled to distinguish, by that period, the food which best agrees with him.

In chronic diseases, it is obvious that the chief means of cure consist in the proper regulation of diet alone. The origin of diseases, it must be allowed, is more frequently to be traced to improprieties in diet, than to any other cause; and the

the mode of relief must necessarily be sought for in the reversing of that plan of living which gave rise to the diseased state.

In the following work it has been the leading object of the Author, to unite the knowledge of particular facts with general principles and reasonings; and to carry these reasonings no further than to connect facts and principles with practice.

He has collected together a greater mass of matter than has appeared before in any single book, and, without assuming any merit to himself, his work must be useful entirely on that account. It might, indeed, have been extended to a much larger size; but his chief labour was to condense his materials, that he might enable readers of all descriptions to acquaint themselves with a subject of such particular importance, and exhibit every fact, at the same time, in the simplest and clearest point of view.

Nothing, indeed, could tend so much to improve the science of medicine, as to endeavour to make man acquainted with himself. The principles of the animal economy rendered familiar and plain, and a knowledge conveyed of the action of substances upon it,

it, is the only way to root out those false maxims and prejudices, which ignorance and education produce.

How far the present attempt has succeeded, must be left to the decision of the public. The endeavours of the author, he can at least assert, have been well intended for the benefit of mankind.

WILLIAM NISBET.

Fitzroy Square,

May, 25th. 1801;

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TO THE PUBLIC.

As a practical System of Diet is necessarily founded upon facts and actual experiments, the Author will consider himself as under great obligations to those intelligent persons who will favor him with any well attested fact, relative to particular courses of diet, or to single articles of food treated of in the progress of his work. These new facts will be carefully incorporated with the new editions, so that in due time, the subject of Diet may attain the degree of precision and perfection which it ought to possess.

INTRODUCTION.

NO science has of late so much divested itself of mystery and technical obscurity as medicine, and none considered as a science affords more ample scope for the exercise of the understanding, and the pleasures of Philosophic contemplation. TO KNOW YOURSELF was the leading precept of ancient philosophy, but it was solely confined to the cultivation of the mind---The same precept may be enforced with equal, if not with more energy as directed to a knowledge of those means, which conduce to the preservation of both body and mind; and allow them equally to become the subjects of such contemplation as philosophy cherishes.

Man, as he is the most perfect and complicated of all animals so he has his wants extended in the same proportion. Not limited by instinct in regard to the means of his support all nature is expanded to his use, and reason is assigned him to select what he judges fittest to supply his necessities---Reason, however, often turns out a fallacious guide, and is apt to lead him astray in this pursuit---But even then his natural constitution is so formed as to bear a number of changes and irregularities, without much injury; and

to make amends in some sort for those errors into which reason betrays him. With all his advantages, however, man is more unprotected than the other animals ; for other animals, we find in some degree guarded from the influence of external causes, which may prove the source of mischief to their frame, and they are circumscribed also in the means of their support to one species of food, which *instinct* directs the choice of, and which proves to them an unerring guide.---Man on the contrary is ushered into the world helpless and dependant, unable to guard his frame from injury ; and provided with nothing to protect him for this purpose. For long he clings for existence to the parent stock, and not till an advanced period is he capable of providing for himself.

When we consider, then, these circumstances of man in his natural and most healthy state, how much must they be aggravated when, forsaking a life of nature, he becomes a prey to refinement, and its unavoidable consequence, disease---His state of helplessness in infancy becomes much greater. His constitution even in the prime of life carries with it the marks of decay, and a sense of pain and uneasiness frequently recurring, forces on him an attention to the means of relieving them, by a guarded selection of what he eats and drinks. The evils, then, of artificial life may be considered as the great foundation of medicine---In the early ages this science was confined *alone* to the *cure* of disease which was then violent, but not frequent.

In

In modern times medicine is *oftener* applied to palliate *deranged feelings* than to cure actual malady. In the early ages, also, disease being so little known, and so seldom occurring, its cure was at first considered as a gift from Heaven. This gift therefore was for long exclusively confined to the servants of the deity, and the Priests improved on this original superstition of mankind. As disease became more frequent, and knowledge extended her influence over the mind, the fallacy of this original opinion stood apparent, and the cure of disease became a science, blended with the other parts of Philosophy, and partaking of course, of all the absurdity and reveries which philosophy at different periods has introduced.

But in more modern times a new state of society and manners has arisen, by which, disease, has both altered its form, and medicine has changed its principles---The simple state of nature is now in every vestige unknown. Artificial life prevails from the palace to the cottage, and the concomitant evils arising from this source, have rendered the constitution of the present day, weak, irritable and a prey to imaginary distress.---Perfect health is now rarely met with, and where it is, instead of being the firm vigorous tone of fibre of former days, it can at best be considered but as a state of deranged feeling, and a predisposition to actual disease; so that the chief part of life, may be viewed as little else than a long period of chronic illness---It is this *perverted state* of feeling

B 2

ing

ing that renders every person now, more or less, a prey to anxiety respecting his health---The treatment of his own complaints, forms, therefore, the leading study of the day---The fashionable pursuit of chemistry aids this increasing foible, and is constantly giving it additional strength---Popular works of medicine form a favourite part of modern study, and in the choice of this study, no part of it surely deserves so much attention as the subject of diet, and the various articles connected with it, necessary to the support of life.

When we consider that in the catalogue of diseases, at least two thirds are of a chronic nature, or the effect of our own irregularities; the importance of this part stands in a conspicuous view---By the very instinct of self-preservation, we are more immediately excited to its investigation, and by a knowledge of it, seasonably applied, we shall often have it in our power to prevent disease---Even where disease has actually occurred, we shall be enabled by this knowledge to check its progress, and at the same time to assist the efforts of medicine. But while the principles of the animal economy being once rendered familiar and plain, is the only way to root out those false maxims and prejudices which education and ignorance introduce, there are certain limits beyond which this knowledge should not be carried---An acquaintance indeed with the subject of diet, cannot fail to be attended with the best consequences; but when this familiar or domestic kind of knowledge,
is

INTRODUCTION.

is extended to what is styled strictly the province of medicine, its influence there is often of the most fatal tendency---Medicine is a science complicated in its principles, and from the varying appearance of disease frequently uncertain.---The man therefore, who, confiding in this superficial knowledge attempts to be his own Physician seldom is so to much purpose. He is liable to mistakes at every turn he takes, and the mischief is often irreparable before he is aware of the danger. Even the Physician who prescribes for himself is not unfrequently led into error, and the remark made to the friend of one, on an occasion of this kind, "He has a chance of getting well, for he no longer prescribes for himself" contains much truth and just observation.

At the same time while a superficial acquaintance with the science is thus condemned, we are equally averse that any mystery should hang over it, or that the veil which has been withdrawn from the other branches of knowledge should continue its obscurity here. Let the principles of medicine be once fairly known, and let its precepts be directed by judgment and experience, it will be then of little consequence whether its aid is bestowed by a professional hand, or by the zeal of humanity and friendship. To assist in doing this is the object of the following treatise, in which we shall consider as the extent of our subject the various means of supporting life, as applied---

1st,

1st, To the surface or external part of the body ;

2ndly, To the lungs, or what we may term the intermediate surface ; and

3dly, To the internal parts, through the proper organ of the stomach.

We shall next examine the action of the body, as modifying the power of these means of support when introduced into the system ; then consider the influence of the mind as affecting the body in the same way ; after which we are naturally led to trace the passage of the various alimentary matters from the body, in their different altered and assimilated states, through the several evacuations ; and lastly, we shall be prepared to concentrate in one detail the various means for the preservation of health, and to mark the circumstances to which the prolongation of life is chiefly to be attributed ; concluding this systematic view of the subject with an abstract of the general principles of chemistry, as applied to this part of medicine, first in the detection of the component parts of diet, and secondly in their various preparation for the purposes of nourishment and the delicacy of the table.

Thus we shall be led to trace the human body as a wonderful system of parts :

By the lungs drawing life and heat from the surrounding atmosphere :

By means of the stomach supplying itself with
nourishment

nourishment from the various parts of creation, for the preservation of its animalization and form :

Then removing, first, the useless part of this nourishment by the intestines :

Secondly, discharging the accumulation of the animal principle derived from the same nourishment by the lungs : and,

Thirdly, giving outlet to the various saline products arising from the operations of the economy, by the kidneys, the skin and the other lesser excretions.

OF THE DIFFERENT CONSTITUTIONS, OR TEMPERAMENTS OF MANKIND.

In order to judge properly of the different effects of diet on the human body, the various constitutions of mankind, on which it is to act, claim a preliminary share of attention. Man is not always the same. A change in his habits is conspicuous at different periods of life, and each individual also differs at all times in many leading circumstances from another. This has given rise to the different constitutions or temperaments ---a doctrine very ancient, and which has received from modern observation a number of modifications.

By temperament is properly meant a peculiar constitutional conformation or combination of circumstances in the habit, rendering the action of all

agents upon it somewhat different in certain individuals from others. This combination was confined by the ancients entirely to the appearances drawn from the nature and composition of the blood, the great object of their attention. The subject has been retouched by the moderns, who in opposition to the ancients, have referred these combinations entirely to the state of the solid, and thus the conspicuous union of both fluid and solid in forming these particularities, have been overlooked for temperament, we find a peculiar constitution, though originally formed, variously modified yet in the progress of life. In the examination of the subject, then the variety of the original constitution falls to be first explained, and then its modification in consequence of succeeding alterations.

The two principal original constitutions of body are the Sanguine and Melancholic.

The Sanguine.

The *first* is described as characterised by the following external appearances. The hair is soft, little curled, of a pale colour; or passing from it throw different shades to red. The skin is smooth, delicate and white. The complexion ruddy. The eyes, though not alway so, are commonly blue. The body feels soft, spongy and plump--- After the period of manhood, there prevails a tendency to obesity. Perspiration is at all times
readily

readily excited on exercise. The strength of the whole frame is never remarkable, and the mind though sensible and cheerful, is also irritable and unsteady---This temperament continues regularly marked through life, it possesses evidently an excess of fluid compared with the solid parts. The nervous system is also easily acted upon. From this view the diseases to which such a constitution is subjected, are *Hemorrhage inflammation*, and some *nervous affections*. This has been named also the voluptuous temperament. It is distinguished by affability, and fickleness in all its undertakings. It is averse to industry, and hence makes little progress in whatever requires depth of research.

The Melancholic.

The second temperament, or the *Melancholic*, is distinguished by appearances very opposite to the sanguine. The hair is hard, black, and curled---The skin is coarse, partaking more or less of a dun colour, which extends also to the complexion. The eyes are very constantly black. The body in its general habit is hard, dry and meagre. The strength is considerable---In the action of the mind there prevails a slowness, a disposition to gravity, caution and timidity---The emotions once excited are tenaciously kept, hence great steadiness is displayed, and resolution in combating whatever occurs. This constitution appears to exceed in the quantity of the solid

solid parts in the same proportion, as the sanguine in that of the fluids. The nervous system is sensible with little irritability. Thus we find a strong steady character the effect of this habit, disposed to contemplation, pliable, but liable to be oppressed with sadness and fear. This temperament, though conspicuous at all times, is more exquisitely formed as life advances, and its diseases are those of the *Melancholic, Hypochondriacal, Bilious, and Hemorrhoidal* kinds.

From these two temperaments, distinctly marked, all the others flow as intermediate gradations,

The Choleric.

The first of the intermediate ones to be noticed is the *Choleric*, which is a modification taking from the *Sanguine*, its mobility and irritability, and from the *Melancholic* its strength and density. Thus the body is soft and pliable, without being dry and meagre; the skin has a yellowish cast. The hair inclines to redness. The eyes are dark and of a moderate size, expressing penetration, and at times a degree of wildness. Rapidity and quickness are displayed both in the state of the pulse, and the different actions of the body. The disposition of mind corresponds to that of the frame. There appears a vigour of enterprize, an ardency of undertaking, and the temper seems alike fitted for laborious exertion, and for supporting the influence of command.

The Phlegmatic.

The second constitution of this kind is the *Phlegmatic*, which possesses less sensibility and irritability than the Sanguine, and more laxity and mutability than the Melancholic. This constitution is distinguished by a soft white skin. The eyes are prominent, the state of the circulation is weak, and every action indicates languor. Its disposition corresponding to this languid state, displays a natural indifference and apathy. It is prone to submission and not easily provoked. It may be characterised as the habit fitted to obey.

Modifications of the four Temperaments.

Such are the four original or leading *temperaments* that distinguish the constitution of man, but these temperaments, again come to be variously modified by different external circumstances and the principal of these external circumstances fall next to be taken notice of.

The first is *difference of regimen*. Thus a constant diet of animal food gives the highest strength both to the action of body and mind; even a degree of ferocity is induced by it, which prevails equally in man as in animals; and this ferocity is further increased when joined by the use of stimulants, either as condiment, drink or medicine---On the other hand the use of vegetable food

food gives a passive sway to the system,* and the nations who confine themselves to that species of diet, want that energy and vigour of body, which the opposite regimen imparts.

The next circumstance to be noticed is *the state of climate and soil*. Thus the acute and lively disposition, that marks the sanguine temperament, is seldom found amid perpetual rains and fogs. In such situations the phlegmatic constitution is universally displayed, while an elevated region and serene sky, give life and animation to every inhabitant.

The third circumstance is *Education*, which has a considerable influence in moulding the constitution of man, especially in the early period of life, when the mind is particularly under its influence.

The fourth is *an ardent desire for any particular study*. This often communicates an activity to the whole system, so that the temperament seems to receive an alteration from its impulse.

The fifth, is *situation in life*, which has also a particular effect in modifying the disposition in man. Thus *want* on the one hand, and *luxury* on the other, variously effect the temperament, nor does the influence of political government do it less.

The sixth is *Age, Society, and Profession*, which may be also stated, as having a considerable power

* To this there are no doubt some exceptions, but these will be mostly found to be persons of the Choleric Temperament.

in moulding the habit. Thus the fire and vigour of youth gradually decreases as age advances, and the Choleric and Sanguine temperaments gradually evaporate with the progress of life.

From this view the constitution of man cannot be fixed but by general leading marks, as it is influenced by such a variety of circumstances which are continually producing a change on its original state so that judging from external appearances alone, we shall often be deceived in forming an opinion, without at the same time we take in the relations, that external circumstances occasion.

OF THE EFFECTS OF LUXURY ON THE HUMAN CONSTITUTION.

Having considered the varied constitution of man, as modified by original and accidental circumstances, it is proper to examine next what may be termed the general morbid habit of the present race.

This habit or constitution consists in an irritability of fibre affected by the slightest impressions, not confined merely to the apparently delicate and female, but extending its influence to the seemingly athletic and robust---By this constitution the diseases of former times have lost their violence and activity, and they appear in a variety of shapes, of which we had till lately but slight conception

tion. Thus the gout has become a Proteus in its attacks. A regular fit in the extremities is but rarely met with, compared with its restless and accidental appearance in other parts, without any regular form or duration. Formerly also it was confined almost exclusively to the male, now it is a frequent visitant of the female sex, while in the same way hysterics a peculiar female disease, is now very frequently found to attack the male.

A morbid sensibility also to variations of weather, may be considered as another characteristic of the present day. Like the sensitive plant, alive at every pore, it is too much the custom, from a superlative, exquisite delicacy, to sit in dread of every change, and sicken with the variation of the atmosphere; nor is this excess of feeling imaginary: whatever the cause from which it proceeds, the distress of the sufferers is real, and a change of organization seems to have taken place alike unfriendly to the constitution of mind as of body. This state is, no doubt, the foundation of the numerous nervous and hypochondriac maladies, which imbitter life and shorten the frail thread of existence, or where they do not shorten life, render its burthen insupportable. From the same state of constitution which gives rise to so many internal ills proceed the numerous affections that disfigure the skin, and which were formerly unknown. These affections are not to be referred, as in former times,

times, to filth and poverty ; for they are the attendants of the rich, the delicate and cleanly in higher life, more than they affect the inmate of the hovel or the cottage. Hence the history of modern physic abounds with the history of modern contagions, whose origin it is impossible to detect, but the effects of whose influence are extensive, and their progress difficult to counteract.

In tracing the effects of diet, then, we shall perhaps be able to make some steps towards explaining their cause, and detecting their nature. They are to be looked for entirely in our domestic policy, and in that difference which exists between the mode of life of our *hardier forefathers* and of *us* their *degenerate descendants*.

DIVISION I.

ON THE MANAGEMENT OF THE SKIN.

THE first part of the body to which the attention of dietetic medicine is directed, in the arrangement laid down, is the *external surface*, or *skin*.

The functions of this part are important and extensive, as it forms the general seat of feeling and sympathetic correspondence with the internal parts of the system ; as it forms the outlet for a large portion of the excrementitious or noxious part of the fluids, and as by its state our sensations are regulated with respect to external impressions. By it too an absorption takes place of something useful to the body from the surrounding medium, though the exact nature of this absorption is not fully ascertained. The discharge by the skin varies, no doubt, from the particular circumstances of climate, season and habit, but the most accurate calculations shew that upwards of three pounds of excrementitious fluids are daily discharged by this outlet, and in quantity that it exceeds that of the urine.

From forming the medium of our sensations, the skin is particularly under the influence of external agents. Every variation of temperature is felt
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by it in a primary manner, and as the harbinger of alarm communicated by it to the internal parts. Every portion of it, therefore, is endued with the most exquisite sensibility, and the vitality of the skin may be considered perhaps as greater in a certain sense than any other part of the body.

A knowledge of the sympathy between the skin and internal system, particularly the stomach, is of much importance in medicine. Substances affecting the stomach are known to have a peculiar influence on the skin, and to occasion a diseased state of it from this cause alone. The temperature of the skin also generally marks the health or disease of the internal parts. The termination of disease is likewise displayed by the influence of the healing powers on the surface, and the increased discharge, or what is termed crisis, is commonly effected through this organ. Thus the state of the skin is a most important object, both for the preservation of health as well as the cure of disease, and on the proper regulation of it the chief art of the physician often depends, for through it he is enabled to carry off the noxious fluids which, by stagnating in their course, have produced disease, or to cut short the cause of disease on its first appearance, by exciting the activity of this organ.

The marks of a healthy skin are its general and regular softness, its flexibility, with a full sense of feeling in every part of it, while, in order to
preserve

preserve this state or retain its health and animation, attention must be paid to its *proper temperature* and *free excretion*.

The first depends on the application of *dress*; the second on the different means of stimulating the surface by *cleanliness*, *bathing* and *friction*.

Clothing.

In considering *dress*, we are to view it solely as the medium for applying temperature to the body, and consequently contributing to its health and animation.

The various fashions which caprice and vanity introduce, deserve no further regard than as they interfere with this original purpose of its application, and in the choice, therefore, of all dress, what is chiefly to be consulted is the ease and pliancy of the body, its proper temperature and warmth, and its counteracting any noxious effects which may arise from the body itself, or the surrounding atmosphere.

The first dress of mankind naturally fell to be skins of animals, and the giving warmth alone would be the motive of their application. With the progress, however, of civilized life, these original coverings were laid aside, and art became employed to form different kinds of coverings more suited to the change of life which civilization produced. In forming these coverings, the same variety has been observed in their colour as in their texture.

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The materials of which modern dress is composed are of four kinds, *wool*, *cotton*, *linen* and *silk*, and each of them has its advantages, and disadvantages in different situations.

Woollen-cloth with the advantage of a proper warmth, gives some degree of stimulus and friction to the skin. By this means the surface is preserved in an excited state, its discharge promoted, the perspired fluid absorbed, and by the spongy nature of its texture again evaporated.

Linen accumulates the warmth of the surface by diminishing the action of the skin, and by its closer texture it retains the perspired fluid, and does not allow the evaporation of it to proceed. Hence when soiled linen produces a sense of cold, and gradually obstructs the discharge of the surface unless it is very frequently changed.

Cotton is equally warm, if not warmer than woollen, but it possesses all the bad properties of linen, in retaining the discharged fluid, accumulating upon it whatever is once received, without giving any tendency to evaporation.

Silk, like woollen, conveys a stimulus to the skin, but has no tendency to promote its discharge. At the same time it possesses the quality of being less disposed to attract humidity than the other materials.

Thus of the several kinds of materials introduced for clothing, *woollen cloth* next the surface deserves the preference, as preserving a due

due temperature, illiciting a proper discharge from the skin, and again absorbing or carrying it off by admitting its ready evaporation. Hence in this climate it forms the most healthy material for dress at every period of the Season; so nature has accordingly afforded a full supply of it for this beneficial purpose. In the uncertain state of a variable climate alternate changes of dress are to be condemned; and linen and cotton are equally improper for forming the first medium between the surface and the atmosphere. The material that can best exclude the action of external agents upon the surface, is certainly the most proper for the foundation of dress, and this material its beneficial effects have confirmed to be woollen. But as well as the material itself, the choice of its colour demands also attention. Yet this choice regards the outer covering of the whole, more than that which is immediately attached to or in contact with the skin. The colour may likewise be made to vary with the periods of the Season, and the degrees of temperature.

Thus substances, or coverings of a light colour, as they possess least attraction for heat, are more suitable for summer; while dark colours, being the reverse, are most proper for winter and spring. Substances of a smooth and shining surface, by strongly reflecting the sun, increase the quantity of heat, and prevent its passing through them. By this last circumstance

Circumstance they are most fitted for warm weather. The colour also requires attention in another point of view as affecting the organ of sight. Hence in common dress, bright colours should be neglected, and only used when unavoidable, and on particular occasions.

Fur and *oil cloth* form both an improper covering as accumulating perspiration, and retaining whatever morbid contagion becomes attached to them.

In beginning, then, to enumerate the parts of dress, the first covering applied to the body should be *flannel*. Its advantages already stated are sufficiently apparent, and this practice being once begun, no variation of temperature should induce the individual to make a change. The feelings become habituated to its use, and, if removed, the skin wants a necessary stimulus to its action. An abundant supply of this covering is furnished by the animals of the colder climates which points out the intention of nature that such a covering is best adapted to these situations. But if this covering is so useful in general, it must be particularly so to those who are exposed to much exertion and fatigue in the open air. Without a covering of this kind it would be impossible for them to avoid cold, which woollen prevents, both by excluding the external atmosphere, and by conducting the profuse evacuation which the increased action of the skin has occasioned. The propriety therefore

fore of this covering has been enforced by all writers, and the advantages attending it have been so conspicuous and important, as to gain it universal acquiescence. The supposed uneasy sensations occasioned by its use are of short duration. They arise simply from its stimulus on the skin, and to this the skin becomes soon accustomed. In the use of flannel, however, a more frequent change of it becomes necessary than that of linen. From its rough nature it is more liable to absorb whatever is applied to it, and in this way only has it been considered by some as calculated to receive infection, but on no good foundation. For these several reasons its general use should be inculcated with the most earnest persuasions, as the best means of preserving the health of the surface, of preventing the influence of cold as a cause of disease, and of conveying an agreeable and equable feeling to every part of the body. In cases of disease its propriety is indisputable; and where so beneficial against the morbid state, it surely cannot fail to prove equally so in preventing its occurrence.

Of the Legs and Feet.

Next to this proper covering of the surface in general the particular situation of the legs and feet require a special attention. By their situation they are most remote from the influence of the circulation and from the general prin-

principle of heat and animation. They are also from their offices more exposed to the attack of cold and moisture, than any other part, and from this situation, particularly the feet, a very considerable discharge is constantly taking place. On these accounts an increase of temperature should if possible be communicated, and their covering even made warmer than that applied to the general surface. The sensation of cold is also here more severely felt than in any other part, and its effect is to produce various affections of the stomach and several of the organs of the lower belly. Worsted is the proper wear for those parts; and cotton, linen and silk should only be employed as additional coverings; but never be applied in immediate contact with this part of the skin. This rule should be strictly adhered to at all times of the season, nor should it even be changed in the heat of summer, when the excessive perspiration of the feet would seem to require it. Nature has intended that the excretion of this part should be considerable, and one of the chief outlets to the discharge of the excrementitious fluids. The accumulation of this fluid is greater, with all the other materials than with woollen, and it acquires at the same time a much more offensive smell by its being brought in closer contact with the skin, and putrefaction thus favored. To correct these some absorbent powder should be applied, or the oxygenated pomade, which will correct the fixed or azotic principle.

Dress

DRESS OF PARTICULAR PARTS.

Of the Head.

The dress of the head varies much in different countries, and the warmer the climate, the number of coverings are often proportionally increased. The same causes that require the proper clothing of the other parts demand an equal attention here, and the want of a covering to the head, as recommended by some authors, would be highly preposterous. “Keep the head cool and feet warm,” has been a favourite adage, but like most others, it requires limitations. That excess of pressure and heat applied to the head, has been productive of bad consequences: we do not deny where a particular fulness or considerable discharge from this part of the body takes place, but the other extreme we shall find as frequently productive of effects equally fatal. A proper medium, therefore, is in all cases to be taken; the head should be slightly covered in a variable climate, and equally protected from the influence of cold on the one hand, and the excess of heat on the other. This attention to the dress of the head should begin with infancy. The head of the child should be covered moderately warm, without so much pressure as to confine it or prevent the growth and expansion of the ear. On the proper expansion of this organ, the acuteness of its sense depends, and wherever its contraction takes place, its influence must become
dimin-

diminished in the same proportion. By the action of its muscles, also, its powers are encreased. Compression, therefore, as preventing it, of course limits the perception of sound.

The most general dress for the head is the *hat*, but instead of being confined to one form or colour, it should vary with the periods of the season. In summer, as the excess of heat is formidable, light colours should be preferred, as black is known in a strong degree to concentrate the heat: the brim should also be so extensive as to prove a defence to the eyes on the same account. In winter the reverse of this should be studied: in its colour the black should be preferred, and in its form the brim, as less necessary, diminished.

The dress of the hair is an object of equal importance as to the outer covering of the head. Nature has intended that a considerable discharge should take place by this part of the surface, and this discharge must be preserved open by frequent ablution, combing, and other means of separating any accumulation of filth from it.

The most healthful method, therefore, in the management of this part, is to wear the hair in its natural state, and if this is not to be done, the use of powder and pomatum should never be carried so far as to form an unpenetrable paste, but rather employed as an absorbent to suck up the acrimony which the excess of the discharge is apt to produce. In this view no objection can be made to the wearing of powder, especially

ally in hot weather : but should the constitution of the person subject him to periodical headaches, cutaneous eruptions, and other marks of accumulation or confined discharge, it should even then be given up, or a substitute for the natural covering made use of, by the adoption of a wig. These observations on the dressing of the hair apply equally to both sexes. The health of this part can only be preserved by a free excretion, and whatever interrupts it cannot fail to prove the source of danger and disease.

DRESS OF THE BODY.

Whatever choice is made of the covering next the surface, which we have recommended to be woollen, the one immediately above, or the proper shirt, is always formed of linen or cotton. In forming this part of dress, the chief point to be noticed is to avoid compression at the neck and wrists. In the former situation any tightness, by accumulating the blood in the head, may be productive of fatal consequences, and even appoplexy ensue. This will more readily occur, should the person be exposed at the same time to much exertion, or exposed to heat.

DRESS OF THE NECK.

The same remarks apply to the covering of the neck as to this part of the shirt : no compression

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or excess of warmth should be communicated by it. The cravat, neckcloth, or whatever name it bears, should be loosely applied, and composed of the thinnest materials. The throat is uncommonly liable to be affected by cold, and all extra coverings, therefore, render it more susceptible of being thrown into disease from this cause. This caution proves the more necessary, as one attack of sore throat generally predisposes to another on the slightest exposure.

This, therefore, should form a sufficient reason against the thick stiffening which is generally applied by men of fashion to the neck.

In the female any excess of covering is generally avoided ; but in place of excess of covering, another circumstance falls to be noticed, viz. the compression of these parts by the use of ornaments. Wherever ornaments are applied, they should be worn in such a manner as not to impede either the circulation or the action of these parts in the different functions they are constantly performing. From want of attention to these circumstances, many fatal consequences have arisen in wearing such parts of dress.

DRESS OF THE CHEST.

Little is to be said on the dress of the chest in the male. In the female the improper compression which generally takes place for the purposes of shape, deserves to be strongly condemned.

All cincture of any part of the chest cannot fail to be productive of disease, and where directed in particular against one point, the other parts that suffer less compression will yield in the same proportion, so that no advantage will be gained by this attempt to benefit the shape. Whatever affects the chest must of course affect the principal organs of the body. While fashion directed such tightness here, no wonder that diseases of the chest, and all the consequences arising from an impediment to their functions, should be displayed in the state of these organs. No covering, therefore, should be applied to the chest but such as is composed of the softest materials, and which is applied in no tighter manner than merely to be accommodated to the natural shape.

DRESS OF THE UPPER EXTREMITIES.

The same compression which is so injurious here, deserves to be equally reprobated, when applied to other parts of the body, as in the sleeves of gowns or coats, or in ornaments applied to the arms or wrists. The functions of these parts, as connected with muscular action, cannot fail to be impeded by compression, and even the nervous energy will feel weak and interrupted from the same cause.

DRESS OF THE LOWER EXTREMITIES.

In the use of breeches these cautions are particularly necessary. The materials of which they are made should always be of a soft pliable texture. They should sit easy, without compression either of the knees or waistband, and the support of the latter should be made on the shoulders by means of braces, so as to avoid any cincture of the belly. To avoid compression at the knees, this form of dress is certainly preferable in the shape of pantaloons; but whatever their shape be, they should always be formed to give some support, and prevent relaxation of the pudenda.

In the inferior extremities compression is unavoidable in a certain degree from the use of garters. With men, where breeches are worn, these appendages are indeed unnecessary. Garters, wherever tightly applied, are productive of very serious evils. They impede in a sensible manner the exertions of the limbs, and occasion much fatigue in walking, and hence those accustomed to much exertion in this way, generally go with the knees entirely unbuttoned, or the garters are placed below. In the case of children, the use of garters is properly laid aside, and their stockings retained by fastening them with strings to the upper part of their dress.

In the choice of stockings, though silk, cotton, or linen may be equally worn as the upper covering, yet some respect should still be had in their fabric to the temperature of the season. A thicker kind should always be preferred in winter, and their thinness gradually accommodated to the state of the weather. In the choice of stockings, also, much attention should be paid to the size of their feet, for here only can compression do harm, as if too short and tight in this part, spasm and distortion of the toes may be produced, and if too large, the pressure of their folds will produce irritation and pain.

To this part of the body, no form of dress is so objectionable as the constant use of *boots*. Where they are made to fit accurately, they cannot fail to produce compression, and to destroy the shape and size of the leg, so that the warmth and comfort they bestow is entirely counteracted by the bad effects their form occasions. Where they are to be worn for the purpose of walking, they should be composed of the thinnest materials, and their size not so contracted as to affect by their pressure the ease and functions of the part.

The covering of the foot, or the *shoe*, is a part of dress more deserving attention than any other, for its improper application is more productive of pain and uneasiness than any other part of dress.

The feet, like the hands, are intended for much pliancy and motion, and on this account they
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are endowed also with much sensibility, by the large share of nerves they visibly possess. In covering them, therefore, particular regard should be had that no interruption take place to these purposes of nature. On no part of the body, however have fashion and caprice exerted their influence more than here, and the shape of the shoe alters with every whim of the day. In the form of the shoe, the two leading circumstances to be held in view are the proper form of the foot, and the exactness of its size. The foot is naturally of a flat form, varying gradually in its thickness at different parts, and rounded at the extremity or toes. The under part, therefore, of the shoe, or sole, should be flat, in order to take a firm hold and its breadth should be always somewhat beyond the dimensions of the part. At its extremity it should be rounded to take in without inconvenience the dimensions of the toes. Hence a shoe that is narrow at the extremity is not fitted to the shape of the part, and must prevent the motion of the toes in assisting the action of the other parts in walking. The height of the heel, as worn by the female sex, is also against a firmness of tread in walking, and tends even to alter the very natural shape of the part.

In the size of the shoe, the next circumstance requiring attention, much nicety should be observed. If too large, a firmness of step is prevented, and if too small, we can only walk with

uneasiness and pain. This fault is more common than the former, and from it proceed the corns, and other callosities which affect those parts, and prove the most painful and distressing complaints to the wearer. Indeed by these affections the use of the feet become often entirely lost. The materials of which the shoe is formed requires equal attention with its shape and size. The substance, along with softness and pliancy, should possess the particular quality of excluding moisture. Leather is generally preferred, and by preparing it with a composition of oil, wax and turpentine, till the leather is fully saturated, it becomes impervious to the access of wet of any kind. Thus by a shoe of a proper size, accommodated to the dimensions of the foot, and particularly rounded at the toe, made of a soft, pliable material, rendered impervious to moisture, an easy motion of the whole foot will be permitted. No bad effects from the pressure or irritation arise, and the functions of the part will be executed with comfort and satisfaction, and as the exact shape and size of the shoe is of so much consequence for this purpose, shoes should never be changed from the one foot to the other, but each foot suited to its particular shape and dimensions in making them.

On the whole the great object of all dress is to convey a proper warmth to the body, and to secure the equality of this, the first covering we have directed to be of woollen. In this climate more people

are hurt by colds than any other cause. This often proceeds from inconsiderate changes of dress, while the state of the weather does not correspond. By covering the surface in the manner recommended, much of this danger will be avoided, or where deviations are made, they will be less severely felt. But even these deviations, though at times excusable in youth, should by no means be made when the meridian of life is past, or at least in a very slight degree. As age advances, even the dress should be gradually encreased, being the best means of preserving the vital energy, and avoiding these obstructions to which the languor of its circulation is exposed.

In the superior parts of dress, the choice may be less strict, and regulated by the circumstances of the person's situation and the season. In adjusting them, however, to the body, the ease and pliancy of the functions of every part is to be studied, and no disagreeable pressure or unnecessary tightness employed in any part as a sacrifice to the fashion or caprice of the day.

Yet, however physicians may dissuade, dress in all ages has been made subservient to the purposes of vanity and pride, and less attention has been paid to the views of nature in its use than to please the eye by the fabric of its texture, and to display the shape and the adjustment of its form.

To conclude this part, the diseases that arise from this cause of a neglect of the proper tempe-

rature, are in this climate numerous and fatal, and those that owe their origin to the compression of particular parts are not less so. To guard against them it is only necessary to study what nature points out, to suit the dress in very part to the state of the temperature, and to avoid all modes of applying it which may interrupt or impede any particular function or organ.

Every one will best judge for himself of the exact temperature his constitution requires, and the dress which will be sufficient for the strong and robust will by no means suit the delicate or invalid.

CLEANLINESS.

We have thus considered what is necessary in regard to the first part of the treatment of the surface, or preserving its proper temperature by the aid of covering or dress. It remains to examine those means which more immediately tend to promote its free excretion or discharge, viz. cleanliness, bathing and friction, and each of them are equally necessary to its health as the preservation of its temperature.

Cleanliness is the removal of every impurity from the body, whether generated by itself, and attached to the substances surrounding it, or merely affecting it by accidental contact. The want of it is considered by many physicians as the chief cause of the diseases of the skin, among the lower classes of people, &c. this opinion

is justly founded. Cleanliness is chiefly effected by simple ablution and change of dress.

The ablution of the body should be frequent and general, and not confined simply to those parts that are exposed. Of the different parts, however, the head, face and mouth claim a principal regard, and also the hands and feet.

The head being intended by nature as the seat of a considerable discharge either from the use of powder in dress, or the accumulation of its own perspiration, is apt to have its excretion interrupted. It should be regularly washed, therefore, twice a week, that the pores of its surface may be opened, when by the further assistance of the comb, every obstructing and viscid particle will be removed, and the pores rendered completely pervious and free.

The *daily ablution* of the face and hands is a practice so common as scarcely to deserve notice. That of the mouth, however, is often neglected, and it should be done after every meal, as the refuse of the food naturally settles about the teeth, and in consequence of heat and stagnation, produces putrefaction, and acts on them and the gums, occasioning tooth-ach, and all its consequences. The breath also, from the same cause, is apt to acquire a disagreeable taint. In cleaning the mouth, the tongue and throat should not be forgot: the former should be done every morning with a piece of whale bone, and after it the throat should be regularly gargled several times

with fresh water. In cleaning the mouth, the chief attention has been generally paid to the teeth, and for the removal of the tartar or crust which is apt to form upon them, every day brings forth a new remedy either as a preventative or cure. The treatment of the teeth, however, should consist simply of washing or rubbing them with the finger, and joining occasionally to it some substance of a mild gritty nature to assist it in the separation of the tartar. All stronger applications are to be made with much caution, for in proportion as they produce a cleanness of surface, they injure the enamel, and destroy its texture. Tooth-picks are injurious, as loosening the teeth, and producing a recession of the gum. The rubbing of a soft cloth will generally be found sufficient to answer every purpose.

Attention to the feet is no less necessary than to the parts we have enumerated. Their discharge acted upon by heat and friction, as in warm weather, and after much walking, produces the most noxious and disagreeable smell: they should therefore be frequently bathed, and an attempt made to correct the discharge in the manner we formerly pointed out.

But besides these particular parts of the body, with many individuals an attention to cleanliness is extended, and the body in general is every morning wiped with a wet sponge, so as to remove every impurity, a practice much to be commended, and the propriety of which is sufficiently apparent.

apparent. Indeed where a habit of cleanliness is once established, no rules will be necessary, as the feelings of the individual will sufficiently point out to him what is proper in this respect.

The frequency in the change of dress, the other part of cleanliness we noticed, must be entirely regulated by the materials worn, by the state of the season, and by the situation of the patient. No maxims, therefore, need be offered here, as every individual can easily judge for himself on this head. In the warm climates, an attention to it is carried so far, that people are in the habit of even shifting twice a day. Indeed if articles of dress are once soiled, and next the skin, there is danger of absorption of their noxious matter, and their renewal, therefore, cannot be too speedy.

BATHING.

From cleanliness we come to examine next what may be considered as a part of it, but its application we are to view in a more extended manner than for the simple purpose of washing.

No remedy has such powerful, such general, and such permanent effects on the system as bathing: it forms equally the luxury of savage and civilized life. Its general utility, therefore, is indisputable. Its modification only to particular circumstances is what we have to consider, and this modification respects both the manner and extent of its application.

From

From the earliest records of antiquity, bathing seems to have been in general use, but for long it was confined entirely to the *cold bath*, and the *hot* one was only employed on extraordinary occasions or under disease. This was the case among the Romans even to the time of Pompey. Among the Celtic nations, bathing was also general, and in the use of the warm bath they were earlier than either the Greeks or Romans. But the most general practice of bathing, has always been confined to the eastern nations, and its utility with them has been so great that bathing has formed an injunction both of their religion and law. Bathing is now used in the different forms of the *vapour bath*, the *warm bath*, and the *cold bath*.

The *vapour bath* is generally employed against disease. It consists in receiving the steams of warm water on the whole, or particular parts of the body. This is a remedy much employed in savage life, particularly among the Indians in America. By this means, as their diseases are mostly of an acute nature, an immediate crisis is given them through the skin; and there is no doubt that in the diseases of a variable climate, which are so much occasioned by a loss of balance, in the equilibrium between the external and internal parts this powerful means of restoring the regularity of circulation, and reducing the unequal temperature of a part, cannot fail to prove most effectual.

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But the best manner of conducting the vapour bath to give its full influence, is among the Turks, of which an account is given by Mr. Savary in those of Cairo. The application of it by his description takes place in the most gentle and regular way. The temperature increases as you proceed to the bath itself, and when there, you are freely exposed to its effects till a gentle moisture is diffused over the whole body. When it is brought to this point, an assistant gives a certain pliancy and flexibility to every part, and then detaching every excrementitious particle from the surface by the operation of friction, so that the skin is reduced to the most smooth and natural state. This is succeeded by unction to a certain degree. This unction is again washed off either with warm or cold water as you incline. The body is now wrapped up in warm linen, and leaving this excess of temperature you are conducted to bed in a cooler apartment. Here also some degree of friction is applied to the skin, so as thoroughly to dry it, after which you dress and the operation is finished.

The rapturous terms in which Mr. Savary describes his feelings after the operation, gives us a high opinion of its animating effects. Perfectly regenerated, one experiences, according to his expressions, “universal comfort;” the blood circulates with freedom, and feels as if disengaged from an enormous weight, together with
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a suppleness, and brightness to which one has been hitherto a stranger. A lively sentiment of existence diffuses itself to the very extremities of the body. Whilst it is lost in delicate sensations, the soul sympathizing with the delight, enjoys the most agreeable ideas. The imagination wandering over the universe, which it embellishes, sees on every side the most enchanting picture, every where the image of happiness. If life be nothing but the succession of our ideas, the rapidity with which they then recur to the memory, the vigour with which the mind runs over the extended chain of them, would induce a belief that in the two hours that succeeds the bath one has lived a number of years."

But the simple hot bath is more generally employed in Europe in modern times. Among the Romans in the latter ages to such a height did the fondness for warm bathing attain, that it formed a part of diet, and was as familiar as eating or sleep; and in no part was their luxury so much displayed as in the erection and furnishing of their baths. In consequence of this the use of them was frequently carried too far, and instead of being an advantage to health, it sometimes, by relaxing too much, proved a source of disease. The use of the warm bath, however, is one of the greatest auxiliaries to the preservation of health; its heat should never exceed that of the body or ninety-six degrees.

grees. By this moderate application of its stimulus, it conveys a vigor and activity to the system, and communicates also an equability of temperature to the whole frame; even where heat and fever have been present, it reduces the pulse to its natural state. On this account in all cases of over exertion, or fatigue, it is attended with the best effects. By its softning powers, the growth and formation of the body is promoted, and that rigidity in which age consists retarded. Hence youth is prolonged by it, the period and infirmities of age if not prevented, are at least kept back to a later day, and the surface in particular preserved in that soft, delicate, and pliant laxity, which gives an agreeableness of feeling, and a general increased animation to the whole frame. With respect to disease again, it is particularly calculated in all cases, where an acrid state of the fluids, a dry fibre, or spasmodic state of the nervous system prevail. In its use some caution should be observed at first, especially where the habit is full, or where a tendency to breast complaints is noticed. The application of its temperature should be gradual, and the employing it not too frequent, till custom has reconciled the system to its full effect.

The cold bath, the third method of applying bathing is the form most generally used in this country. It possesses every advantage of cleanliness. It gives firmness and tone to the general habit,

habit, but in proportion to these advantages, it is apt to do harm, and it requires more precaution in its use than any of the other forms. To the infirm and weakly, it is often of the greatest benefit; where this weakness is not so great as to prevent the effects of re-action, or that exertion of the powers for the return of heat, which the application of cold for the time suspends. In the strong and robust, by giving an irregular determination to parts, and of course producing accumulation, its use may be often attended with fatal consequences. Hence where the body is over heated, and in the plethoric and asthmatic, it has been known to produce the most alarming symptoms. In its use therefore proper regulations should be laid down and attended to, and these regulations respect the *time* of using it, the length of its continuance, and the after conduct.

The most proper time to use the cold bath, is when the body is in its most passive state, and its fluids neither accelerated by the operation of digestion nor by strong exercise. This time is the morning and forenoon. If done at any other time it should be at a proper distance from a full meal.

The length of its continuance should be very short, as its sole effect depends on the immediate and quick impression of the cold, which if continued too long, instead of producing the necessary re-action of the system, and an increased

vigour

vigour has the contrary effect. One dip or two at all times should be reckoned sufficient; and it should be applied as it were instantaneously or by a sudden plunge.

The after conduct consists in the immediate wiping the body as dry as possible, so as by means of friction to assist the necessary glow of heat, or an increased circulation, the effect required.

But the use of the cold bath by full immersion in this way, is often a dangerous remedy. Hence its partial application by means of what is termed the *shower bath* is now more frequent. This consists in the water descending from a machine, placed above him, upon the head of the person, and thence falling over the other parts of the body. By this method the application can be regulated at pleasure, both with respect to its exact continuance and temperature, and as the superior parts of the body receive the first shock, all the bad consequences arising from the common manner of using it are avoided.

As the impression of cold instantaneously conveyed, is the cause of the benefit derived from this application, Physicians to avoid the inconveniences of water have wished to substitute a different fluid for the same purpose. Hence the *air bath* has been lately introduced. The exposing of the naked body however, to a cold air will not be found to produce the same advantage, as its exposure to water

From

From these general observations on bathing and its different forms, we are led to consider its application as a preservative, in particular to the health of the surface.

The morbid state of constitution that attends modern life is characterised by an excess, as we remarked, of sensibility, and this excess produces a weakness in the exercise of the functions, particularly in the discharge of the excretions, that renders the general health liable to be affected by the slightest interruption of them. This is more conspicuously the case in the excretion by the skin, as being the most copious, and discharging, as we observed, upon an average no less than three pounds of fluids daily. To preserve therefore, a proper state of health in this organ, its regular discharge should at all times be elicited by a constant use of the bath. In winter in this climate, the warm bath should be always preferred, or that brought to the degree of 96 or 98. In spring again, it should yield to the tepid or lukewarm bath, by reducing it to 80 or at most 85. And in summer the cold one will be most suitable, and contribute to the same general benefit, by producing that re-action, which the excess of heat then demands, and the degree of its temperature may be rated from 32 to 60 or 65. By these different changes, the leading object will be perceived of animating and exciting the system in general, as well as of producing the particular effect intended on the surface. No improvement

improvement of the police is so much to be wished for, as the erection of public baths, where the lower classes of the community could have the benefit of this plan of treatment now recommended. We should then see many of these constitutional diseases so frequent in this country, and the effect of our variable climate, greatly decrease, if not entirely disappear. The encreasing glandular affections, the numerous defœcations of the skin, are all but the consequences of a weakened habit and suppressed excretion; which a free action of surface would lessen, if not completely remove.

Nor should the use of the bath alone, as we have recommended, be deemed a sufficient treatment to produce the full effect: it should be succeeded by some soft unctuous substance, gently extended over the whole surface; and this again should be carefully removed, except such portion of it as may be absorbed by a gentle and continued friction during its application.

FRICTION.

Friction is the last means we enumerated for exciting and invigorating the surface. It is a favourite remedy among the Eastern nations, and is applied strongly in all cases of local disease, whether of congestion or pain. Its influence on the small series of vessels which are generally the seat of such disease, cannot fail to be considerable;

able; but in this country we have too slight an opinion of its effects, and too little experience of its proper and continued application, to judge of them.---Like other medicines it should be suited in its degree to the state of the person. In a weak state of body, moderate friction will be best, and all violent irritations should be avoided.

Friction is performed in three ways; either with clothes, with a flesh brush, or simply with the hand. The two first are best suited to the state of health, the last will answer best in disease, and is the method chiefly preferred by the Eastern nations.

From what has been observed of the treatment of the skin, the necessity for preserving its *proper temperature at all times* will be apparent; and in order to continue this part as well as the body in general in a state of health, the farther means should be constantly employed of *cleanliness, bathing, and friction*. The discharge of the skin, though less perceptible, is the most copious of any in the body, and no malady almost attacks the frame, we should remember, while it continues in a regular and healthy state.

DIVISION II.

OF THE EFFECTS OF THE ATMOSPHERE.

THE moment of birth renders the presence of air necessary to the continuance of existence. From that period the lungs are set in action, and require a supply of this their appropriate food; which they are peculiarly fitted to receive, to digest (if I may so express it), and again in its changed state to expel. Without it no animated being can exist; both animal and vegetable life become extinct when deprived of it. But like every other species of nourishment applied to the human body, its qualities are found to vary. Hence it becomes an object of the first importance to enjoy it in its most perfect, or its fittest state. In order to judge of this, it is necessary to enquire what it is that is particularly drawn to the animal system from the air.

The air we find by no means a simple or elementary fluid; though colourless, inodorous, and invisible, chemistry has detected its nature and properties; and from this detection has given it, if it may be so termed, a substantial body and a form. The atmosphere is found to be a fluid, holding in solution water impregnated with salts, sulphur, the different products of putrefaction,

faction, &c. and, after carefully separating these foreign ingredients or adventitious parts, its peculiar principles are found to be reduced to *oxygen*, *azote*, and *carbonic acid*, in various proportions. The proportion of the first, or oxygen, is about 27 in the 100 parts; that of the azote about 72; while the carbonic acid fills 1 part in the 100.

Of these parts, the only one eminently fitted for the support of animal life is the oxygen, or what has been therefore named vital air. This part, stiled also the acidifying principle, was first discovered by Dr. Priestley and Mr. Sheele, and its connection with the vital principle of animals established by experiments. From these experiments it appears, that on its presence we depend for existence, and the salubrity of the atmosphere to the human frame is determined by the proportion of it that composes it. Hence the producing or evolving it artificially for the cure of diseases, is a practice daily gaining ground, and which has been found highly useful. Hence too the explanation of the action of many powerful medicines on the body depends on their giving out a quantity of this principle. The proofs of its alliance to animal life are conspicuous, in the recovery of suspended animation in consequence of suffocation or apparent death; and here its application is attended with instantaneous success. In a powerful degree, also, it increases the combustion of bodies, and brings substances

substances in a heated state to the actual point of inflammation. Hence the lungs, by inhaling it in respiration, supply the body with the principle of life and heat, which is constantly again passing off, and on this organ the body depends for its supply.

Azote, the opposite principle to vital air, may be considered as that part of the atmosphere which is vitiated by the different processes going on in nature. Though fatal to animal life, and totally irrespirable, it forms the great support of vegetable existence. It accumulates wherever society prevails much, and where many are met in one place. All smells of fresh paints arise from its presence, and all places are filled with it where there is no access of fresh air. It weakens in different degrees the springs of life, where it does not totally destroy them, and prove the fruitful source of disease.

The carbonic acid, the third elementary part of the atmosphere, is equally noxious to existence as the former. It is generally the product of fermentation from vegetable, some animal, and also mineral substances. Its presence is chiefly conspicuous in subterraneous cavities, where it is found in a pure or disengaged state, and where it frequently proves fatal to those employed. It is found also in mineral waters, the surface of which it occupies; in fermented liquors, which acquire from it their pungency and briskness, which may be recalled when lost by the artificia'

supply of this principle; or it is emitted from the leaves of plants, particularly in the absence of the sun. Thus while oxygen invigorates and supports the vital principle, the carbonic acid destroys irritability, and suddenly extinguishes life. The powers of respiration are soon checked by it, and animals are destroyed more quickly from its action, in proportion to the degree of animation or life they possess.

Such are the constituent parts of the atmosphere, or of that medium by which animal life is supported from the time of birth, to the period of dissolution. It forms a receptacle of all the effluvia from terrestrial substances both of an inanimated, and animated kind. Hence it could not fail to be soon unfit for the continuance of animal life, and the other intentions of nature, did it not in an eminent degree possess the means of purifying itself. These means consist in the *ascent of vapour* and the *process of vegetation*: The former takes place in a most remarkable degree, and by its constant exhalation and ascent much of the effluvia becomes naturally attached to it, and is thus carried off. But the latter, or the growth and vegetation of plants, is the grand engine employed by nature, for renovating the purity of the atmosphere, and as the proportion of azote exceeds the other parts, so we find the extent of vegetable life, far exceeds that of animals suited to this proportion, and in order to form
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an adequate power, to rectify the vitiated state to which the atmosphere is so naturally prone. The evidence of this power which vegetables possess, was first discovered by Dr. Priestly, and afterwards our knowledge of it extended by Dr. Ingenhouz. Both found that air tainted by respiration, was restored to its purity by the vegetation of plants, and that after a certain time animal life could be supported by it, the same as in its original state. This power of vegetation was found greatly assisted by exposure of the plant to the sun; but this power was limited to certain parts of the plant, and confined also to the day time, for during the night the atmosphere exhaled from it was on the contrary azotic. Thus the influence of the sun gives to vegetation a power of preserving the atmosphere in a state of purity fit for the support and preservation of animal life, and counteracts the various noxious effects arising from the operations of nature, and which might militate against the animated part of creation.

After these general observations on the constitution of the atmosphere, we are now to view it as applied in its united, or common state to the human body, and we trace the effects which thence arise to the health or injury of the frame. That these effects happen, we are daily convinced of by experience, both on ourselves and others; at the same time we should be cautious of referring these effects, as many have done,

to this sole cause, unless the chain of connexion between the cause and effect is strongly marked, and analogy adds weight likewise to our opinion.

Air then seems to influence the human system in various ways ; by---

1. ITS GENERAL PRESSURE.

The body is equally pressed on by the incumbent, and circumambient atmosphere. This pressure on an average is found at all times, not less than 3,902lb. rating the superficies of the human body equal to 15 feet. Can we then finding a power acting so strongly upon the system, be surprised at the effects arising from changes of weather. These effects experienced are counteracted by the powers of the system which exciting increased action, overcomes the consequences of pressure on the surface, and restores the energy of the whole. By this means the vessels are kept dilated, and a resistance to the circulating blood is opposed by the additional action of the vessels producing a more forcible expansion and acceleration of their contents. Thus the pressure of the air on our bodies preserves the state both of the solids and fluids, and when the pressure is taken off, as on the tops of high mountains, the blood is found to issue from the skin and lungs, so as even to occasion hemorrhage.

2. ITS SALUBRITY.

The proper proportions of the common atmospheric air were already considered, and in these proportions it is found fit for supporting the functions of animal life. But wherever these proportions vary by an excess of its azotic or carbonic part, it becomes unfit for respiration, and consequently for supporting the state of vitality which is consistent with health. It is thus that we find workmen in particular situations fall a sacrifice to the impure state of the atmosphere, which their occupations occasion.

From the opening of confined places, these accidents are apt also to arise, and the explosion of inflammable air in mines is a frequent source of mortality. No cause also tends more frequently to vitiate the atmosphere and impregnate it, than the establishment of burying grounds in populous cities. The encrease of the azotic principle from this cause, cannot fail to be highly dangerous; and the constant progress of putrefaction, in every stage, must produce such a tainted state of the surrounding medium, that the lungs must be oppressed, and unable to convey but a very small share of that vital energy which is requisite for the support of health, and which requires to be regularly and fully drawn from the atmosphere, to ensure its continuance. Hence, with a view to health, a proper salubrity of air should be

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particularly

particularly studied, and our situation chosen free from all the circumstances here enumerated, as tending to encrease the proportion of its irrespirable parts.

Hence the advantages of rural life compared with that of a city. Here mortality is in the proportion of nearly one half to that of the country, a proof that man was never formed to live in crowded society. The breath of man, more than that of any other animal, hurts his fellow creature; and the succession of the same repeatedly passing through his body, converts it to a deadly poison. How much, then, must these evils be encreased where the air of a city is farther tainted by any adventitious means?

3. ITS TEMPERATURE.

The salubrity of the air is best judged of by the health of the inhabitants of any place, and the age to which they attain. By this test, we are determined in favor of elevated regions, for there the longest lives are found. The same observation has been applied to sea ports, and in general also to villages, while the haunts of crowded society, the populous city and town, appear the bane of longevity, and conduct to an early termination of existence.

The temperature of the air is a point of equal consequence to health as its salubrity. Warm air, it is well known, relaxes the body, and encreases

creases the general agitation of the fluids, producing by its continuance considerable depression, and weakness. Hence summer is the fruitful period of nervous diseases, and the consequences which arise from a too encreased and irritated circulation. Cold, on the other hand, gives firmness and solidity to every part of the frame. An elasticity and vigour is communicated every where, the powers of the stomach are active and strong, and the fluids acquire a density and resistance to the action of the solids. Thus winter is the source of inflammatory complaints, or those the effect of superior vigour and tone. In an extreme degree it even proves fatal to animal life. This takes place in any degree below 32 of Farenheit, particularly if the cold is applied along with snow or hail, so that the continual evaporation shall carry off the animal heat, for then a sufficient quantity is not left for the support of the vital powers. The sensations that arise in this state are first chilliness and uneasiness, and these are soon succeeded by a listlessness and drowsiness, which inclines the person to sit down and sleep, from which he wakes no more.

A moderate temperature, therefore, is always most healthful to the human frame, or that degree which neither encreases too much the circulation on the one hand, or chills and weakens the vital powers on the other. Such a temperature particularly distinguishes certain climates,

which have received therefore the appellation, from this mildness of temperature, of medical climates.

These climates are the South of France and Italy, Lisbon and Madeira. Their effect in certain diseases, from this mildness of temperature, has long been acknowledged, and they are generally resorted to, to counteract the evils which an opposite extreme has produced.

But the temperature of the air is also regulated somewhat in every country by its local circumstances or situation, for the exclusion in part of the causes which lessen temperature, cannot fail to have great power. Thus a level country in the same climate, it is clear, will be always more temperate than an elevated one; and where the situation is encompassed by mountains or woods, the temperature will be encreased in proportion to the shelter they afford it. Hence also the air of towns will be milder than that of the country, while the air of the country again will be purer than that of the town; and so strongly is this marked, that persons from the country are subject to constant head-ach for some time after making the change.

4. ITS DRYNESS AND MOISTURE.

Dry air, by communicating elasticity to the body, has a particular influence on the ease and serenity of the mind. But to enjoy this influence

ence, it must be necessarily combined with a certain temperature; for with cold, it encreases too much the power and activity of the solid, often to that degree as to predispose to inflammatory diseases; and with heat it debilitates and enervates in the other extreme.

A moist air has quite the opposite effect. Languor, inactivity and depression are its constant attendants; so much so, as to have been proverbial at all times, and to have given occasion to the celebrated Greek adage for dullness, viz. "The being born in *Beotian air*." By retarding the circulation of the fluids, and of course producing a slowness in the exercise of the functions, it lays the foundation of obstructions, and all these evils that arise from an interrupted discharge by the skin; and its effects are encreased according as it is combined with different degrees of temperature.

Hence in cold weather moisture is reckoned unwholesome, by particularly affecting the state of the chest and belly, and thus disorders of the breast and bowels are its frequent consequence. But in a high temperature, the fatal effects of moisture are still more conspicuous. It is in this state it unfolds the seeds of disease with unbounded violence, and produces the most dreadful mortality on the human frame. From this cause are its ravages so remarkable in our West India Islands, in Batavia, and in many of our finest colonial possessions, which render them the grave of European enterprize and industry.

5. ITS SUDDEN VARIATION.

By variations we mean properly sudden transitions to extremes of temperature, which never fail to prove highly injurious to the human frame. They are particularly felt by the weakly and diseased, who from their very feelings, are often able to predict them. Hence the unwholesomeness of warm climates at night, when the removal of the sun produces an extreme degree of coldness that is often insupportable. Hence the fatality which, even in our climate, is known to attend the passing suddenly from the excessive temperature of a heated room, to the cold chilly blast of a wintery atmosphere. The human constitution is formed for progressive changes, not for extremes: to this nature ever pays attention, and it is our business to follow her steps in our conduct respecting the regulation of health.

In this part of the subject may be properly introduced the effects of winds or strong commotions of the atmosphere: these are considerably influenced by the local circumstances which affect their qualities, and consequently render them salutary or pernicious to the human frame. Thus winds passing over a continent are generally of a dry and healthy nature. Winds again coming from the ocean, or blowing over high mountains, become loaded with moisture and cold

cold. The south wind is generally of a mild and relaxing nature, while the north wind is dry and bracing, and carries off these impurities with which the atmosphere is occasionally loaded. In the same way the wind in the early part of the day, or morning, is drier or more healthy than in the evening, when it becomes loaded with the moisture and exhalations which evening brings on.

6. ITS PECULIAR IMPREGNATIONS.

The atmosphere is also rendered at times unhealthy by peculiar impregnations of an aromatic or narcotic nature, but these are very limited in their effect. Thus the strong scent of odours and perfumes vitiate the air, and are pernicious to health, affecting the nervous system in a peculiar manner. Plants and trees of a poisonous nature issue exhalations, in some climates, so powerful as to extinguish all animal life that comes within the sphere of their atmosphere. In this climate the air of a flower garden in autumn, is often extremely tainted, and is apt to prove injurious to those of a delicate and irritable habit. But these are rather local than general effects of the atmosphere, and but limited in their extent.

PARTICULAR INFLUENCE OF WEATHER AND
SITUATION.

From this slight view of the composition and general effects of the atmosphere on the human frame, the particular influence of the weather in the same climate, and in certain situations of it, on the state of health of individuals, will be apparent.

Thus if we attend to the different seasons, spring, as it unfolds the greatest quantity of oxygen or vital air, cannot fail to be the most healthy, for then is thrown out the greatest quantity of that principle on which we have seen the existence of life depends. The beginning of summer is equally salutary on the same account, till its continuance, or the excess of heat produce an enervated state, and relaxation of the nervous powers, the constant effect of too high a temperature. Of all the seasons autumn may be considered as the parent of corruption and disease. Then are unfolded all the noxious principles which alter the composition of the atmosphere from its natural benign state, and give an excess or over-proportion to its noxious parts. This effect of autumn is also heightened by its degree of temperature. The powers of putrefaction, then active, are checked by the occurrence of cold, but display an extensive destruction when aided by a more than common mildness of weather

ther at that period. Hence a cold autumn is the most healthy.

Correspondent also to these consequences of the season, are the usual appearances of disease. Summer displays always those of a putrid and bilious tendency, winter those of a more purely inflammatory nature, and spring and autumn those of a mixt and often irregular kind.

The enjoyment of health at all times of the season is chiefly to be looked for, when the season corresponds in its proper temperature, to what it should naturally be. When it is neither too cold nor too warm, but proceeds in an equal and uniform progression to introduce its necessary changes.

But allowing the general influence of the season to take its course, something still remains with ourselves to guard against certain local inconveniences from it, where situation is concerned. In every climate certain situations are experienced more healthy than others, and where a choice is left us, a dry elevated one is preferable to any other, sheltered from the north and east, and having its aspect to the south. In the construction of the house, even in such a situation, certain attentions are also necessary. A large proportion of our time is devoted to sleep, and for this reason our chambers should not only be spacious and lofty, but they should admit a free
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current of air to pass through them, by the construction of their casements.

All appearances of damp should be carefully counteracted by the use of fires and ventilation. It is on these means, in a great measure, the wholesomeness of our habitations, however situated, will depend. Hence all houses should have the atmosphere freely admitted into them, and a change of air, or a current, through each apartment, should take place as often as circumstances will permit. Particular rules in such cases are unnecessary: the great fact being now established, that the air we once breath is rendered unfit for further respiration, or the uses of life, and that stagnant air is also of a noxious quality. These truths will sufficiently direct every one what is best to be done, to render the air surrounding them as pure as possible. If to this we add, that the climate in which we live possesses in winter a temperature from 32 or 40 to 50 or 55, of Fahrenheit, and in summer from 65 to 70;---these will be the regulations for the standard temperature of our apartments at the different periods of the season. The medium of 60 will at all times be found the most healthy degree for mankind to live and breathe in.

The whole rules, then, on this important subject, which has been so largely treated by popular writers, may be all comprized in a very few words:

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1st, That the atmosphere of the country in general, from its superior proportion of oxygen or vital air, is preferable to that of the city, as confirmed by their comparative mortality.

2dly, That of country situations, a dry elevated one, with a southern exposure, is the best choice for a residence.

3dly, That in town the same choice is to be observed as far as possible, or a preference given to an elevated situation.

4thly, That this situation is to be rendered as healthy and dry as possible, by ventilation and fires.

5thly, That the temperature of such a situation should be preserved at all times nearly on an equality with that of the atmosphere, and never carried to an extreme degree.

6. That all causes vitiating the atmosphere, and encreasing its proportion of *azote* by *heat*, smells or effluvia, stagnation, damp, should be carefully counteracted, as pernicious to the health of the system.

DIVISION III.

OF ALIMENT, OR DIET.

HAVING considered our subject so far as applied to the treatment of the skin and lungs, or the external parts of the body, we come now to enter upon what is the proper business of diet, or the examination of these substances which, passing into the stomach, or internal system, under the appellation of aliment, serve properly for the nourishment and support of the whole.

These substances are distinguished by the terms of *food* and *drink*. The former chiefly contributes to the nourishment of the body; the latter is often necessary in the preparation of this nourishment, either by its dilution, or by its stimulus, in order to give vigour to the organs in their operations.

OF FOOD IN GENERAL.

By food, then, we understand the solid part of our aliment; and, though this has varied at different periods of society, the extent of it must always be confined to substances either of a vegetable or animal nature. In the early history of mankind, their food consisted entirely of the former,

former, without much choice or variety. Acorns and berries are the first aliment of which we have any account, and these were joined with such fruits as chance spontaneously threw in the way. This insufficient diet soon gave place to the use of wild animals, taken by hunting; and, as these decreased in number, necessity then introduced the various arts of increasing their quantity of nourishment. The first of these would naturally be cultivating the ground, and rearing the farinacious seeds or corn. This would soon be accompanied by the domestication of animals, and the joint use of vegetable and animal food. But society must have been far advanced before fish came to be used as an article of diet, both as being taken from an element to which men were long unaccustomed, and also from their being of an appearance less similar to animal matter.

All food, then, is either of an animal or vegetable origin; the former is, no doubt, more allied to our nature, and most easily assimilated to its nourishment. The latter, though more difficultly digested, forms the foundation of the former, as vegetables are the nourishment of animals, and all food is therefore properly derived from this source. In many respects, however, vegetable and animal food differ; and this difference it is proper to remark, according to the various effects it displays on different parts of the system. In the choice of vegetable food,
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a much nicer selection is made by man than any other animal ; and his choice is chiefly confined to those of a *mild, bland nature*, and of an agreeable taste. Where any other substances are selected, it is entirely for the purposes of condiment or medicine. The first difference to be observed betwixt animal and vegetable food, is on its effects on the stomach and bowels. In the stomach, vegetable food displays always a tendency to acescency ; while animal food, on the contrary, tends towards putrefaction. Hence the former is apt to produce symptoms of uneasiness, while the latter is almost never felt. In the same way ease and facility of solution belongs to vegetable food ; while, from greater firmness of texture, and viscosity, animal food is apt to oppress. Nor does the latter, from its oily nature, mix always easily in the stomach with other matters ; while vegetables unite readily, but frequently continue long on the stomach for want of stimulus. Similar effects are produced in the bowels, by these different kinds of food, as well as in the stomach. The acescency of vegetable food is at all times apt to induce looseness, while the same effect is never known to arise from animal food, except in a very advanced state of putrefaction. On the contrary, the body is generally kept by it in a regular state ; while vegetables, from the lesser portion of them going into chyle, produce a larger proportion feculent matter, and lie longer in

in the intestines, from their inactive nature before being expelled.

The nourishment conveyed by both kinds of food is much the same, but the animal product is in greater quantity, and more easily concocted, while the vegetable retains its more watery nature with a portion of unassimulating saline matter, which though introduced is again expelled by some of the excretions. The animal blood then is richer more elaborated, and stimulating, and excites a stronger action of the system than the vegetable. Both products, however, equally take on an alkalescent nature in the circulation for the acescency of the vegetable, is confined entirely to its action on the stomach and bowels. Thus from animal food a greater supply of nourishment is received for the wants of the system, depending on its greater quantity of oil, and its longer retention in the body, than vegetable food. Agreeable to these different effects of animal and vegetable food it is farther to be observed, that the latter is more quickly to be perspired than the former. Hence the tendency to obesity which arises from animal food, while part of the vegetable aliment is very quickly carried off by urine.

The combination of a vegetable, and animal diet, is certainly best suited to preserve a proper state of health and strength. There are few who subsist entirely upon vegetables, and of these few, the constitutions are generally feeble

feeble, sickly, and weak, and they are the constant victims to complaints of the stomach and bowels. Where this method of life is at all practised, it is confined to hot climates, where vegetable diet may no doubt be pushed to greater excess without injury. Some nations also have gone to the other extreme, and live entirely on animal food, and in a very cold atmosphere; this may be indulged beyond what would otherwise be safe for the health of the body, so that a mixture of vegetable and animal nourishment, seems more fitted for the health of man. But the proportion in which these ought next to be used, is a point equally necessary to be enquired into. The benefits that attend animal food are clearly the giving a superior strength and vigour; but, in proportion as it carries this to excess, it exposes the body to dangerous consequences, and to the production of various diseases. Hence those who exceed in the animal, or what we term the athletic diet, are soon worn out, and fall the victims of this over proportion of strength such living bestows.

The advantages again of vegetable food, are mostly all of the passive kind, and though it is difficult of assimilation, yet under certain circumstances, a tolerable degree of strength and vigour may be acquired from it. It is more favourable for the appetite than animal food, and little injury can arise from too much repletion
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with it. It has many advantages over animal food, as it introduces no improper acrimony into the system, and counteracts the baneful effects of animal diet. It is to this preference of vegetable food, the French owe their freedom from disease in a greater degree than the English, and the best rule to secure health, perhaps, is to confine infancy and youth, mostly to a vegetable diet; manhood, and the decay of life to animal food; while near the end of life, the vegetable system should again be returned to. But, whatever kind of diet we adopt, a variety in the form of our food, as well as the nature of it, should be attended to; thus the constant use of solid nourishment, however wholesome and nutritious, by giving the stomach more to do than is necessary, must be attended with hurtful consequences. In the same way a perseverance in liquid aliment, however, fit by its qualities for conveying chyle into the system, could not fail to prove an improper diet, by depriving the stomach of that necessary stimulus from its form, which solid food conveys. A mixture therefore, of solid and fluid nourishment is absolutely necessary, whatever, the nature of that nourishment may be, and this proportion must be regulated by the different situations of different individuals. A man who is subjected to much bodily exertion requires certainly, the proportion of solid food to exceed, and likewise to be taken, in the most permanent and nutritive state.

state. A man again accustomed to little bodily labour, and subjected to the ease and inactivity of sedentary life, should reverse this plan, and the proportion of liquid should be greatly encreased. In the use of the different kinds of food, the same regulations are proper. Where along with a sedentary life the stomach rejects much vegetable food, and a tendency to acidity renders its use improper, the bad consequences of an excess of animal diet must be corrected by giving it in the most soluble and dilute form. Thus the use of soups and broths become highly proper, as giving the sufficient stimulus of animal food to the stomach, and at the same time presenting it in a form by which a considerable part quickly passes off, and the excess of nourishment which constant animal food would produce is greatly counteracted. It is to this cause that we may attribute the little injury which animal food is known to produce in Scotland, and also in France, where soups are much used.

With respect to the quantity of food to be actually taken, this must be regulated much by the appetite and the supply required. The appetite is the great indication of health, and where the stomach is in a healthy state, it relishes almost every kind of nourishment that is presented. This being the case, we are entirely to be regulated, in the quantity taken in by it. Satiety is the natural consequence of repletion, and before this takes place, the stomach itself gives the alarm.

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Among popular writers it has been a common axiom that a small quantity of food is easiest digested, and that we should rise from table with an appetite. This idea proceeds entirely from the opinion that digestion is effected by the muscular power of the stomach. But it is a truth sufficiently established that this is not the case. It depends entirely on the fluid of the stomach or gastric secretion, and is performed by the application of this fluid equally well out of the body as within the organ. Indeed we may suppose that a considerable quantity of food, when taken, by producing a greater stimulus or irritation of the stomach, will encrease, of course, the secretion of the gastric fluid, and thus accelerate the process of digestion. At the same time it must be observed that there is in infancy a proper foundation for this restriction. The gastric fluid in children is both more active, and also the stomach yields readily to distention, the appetite, therefore, will continue longer before the sense of satiety takes place; but even here, as the diet is mostly of a dilute kind, and soon passes off, I am convinced more has been attributed to the effects of repletion, as the cause of disease in children, than what it deserves.

The proper rule, in all cases, is that the body should be sufficiently nourished, whatever the nature or the quantity of the nourishment employed be, and this is best determined by the apparent state of the body, and what is again
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lost by it, or the quantity of its different discharges. The body also, we may observe, is at all times under the influence of habit, and where it is accustomed to be circumscribed, it is amazing often to find what small quantities of nourishment will suffice, and even health be preserved. Of this we have a number of most remarkable instances brought forward by medical writers. Nor is this confined solely to man : the animals shew that their bodies can accommodate themselves to similar circumstances. This being the case, the constitution of man is limited in this respect less, even in civilized life, than what has been alleged. The chief point is only in health to guard against extremes ; for a uniform mode of life, even where errors are conspicuous, is always less dangerous than sudden excesses, either of one kind or another.

The manner of taking food also requires attention. In all solid nourishment a proper manducation should take place : this is a preparatory and necessary step to the action of the fluid in the stomach, but this manducation also should not be carried, as some have advised, too far. Something should be left for the stomach to do, and this organ will be found improved by exercise and by encreasing its active powers, as well as any other part of the body. Hence substances of a somewhat difficult digestion may be at times properly presented to it.

In his choice of food man is not circumscribed
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like the other animals. Its respective salubrity or perniciousness he can in general only judge of by its taste. Hence, that his taste may be as little deceived as possible, most nourishing substances, we observe, are of a bland, mild nature, and contain nothing offensive to this organ. Hence too there is a certain pleasure conjoined with the gratification of appetite, which is meant both as an incentive to our taking nourishment, and also to direct us somewhat in the selection of it.

From the constitution, however, of man, experience shews that any nourishment, however unfit, may be assimilated by habit, and that wholesome and unwholesome are often merely relative terms, regulated by the existing circumstances in which individuals are placed.

The desire for solid food is much seldomer carried to excess than that for fluids. Both, where they occur, are not the effect of a natural appetite, but rather of that artificial one which is created by the use of stimulants encreasing the relish of food to the palate, or its stimulant effect on the stomach. This excess becomes encreased by indulgence, and a habit of course, comes to prevail which distends the stomach, relaxes its tone, and destroys its elasticity ; in consequence of which disorders of this organ arise, and a general fulness and corpulency in the whole system takes place.

The manner of taking food, as well as the

quantity and quality requires some attention. --- All extremes in taking food, should be carefully avoided ; it should pass into the stomach in a slow and regular manner, blended by the process of mastication, with a sufficient quantity of saliva to promote its dissolution in the stomach. If hurried over without attention to this, the difficulty of solution is increased, and the stomach is suddenly distended, and satiety produced before it is filled. The meal, therefore, becomes both deficient in quantity, and the food from the digestive organs having more to do, remains longer on the stomach than is either necessary or proper.

The state of the stomach, like the rest of the body, is much influenced by the alteration of the seasons :---In summer the body becomes in general relaxed and exhausted, and the stomach is unable to receive or digest its proper quantity of solid nourishment. In winter again, that tone which is communicated to every part, is conspicuous also in the stomach. The appetite is keen. The organ receives and digests the most dense and solid nourishment, without being sensible of any inconvenience from it. To this general rule, however, there are some exceptions : in some habits where the bile is sparingly secreted, its increased quantity in summer augments the appetite, and occasions the functions of the stomach to be more actively performed. The degree of exercise also taken at different periods of the sea-

son will have much influence on the state of the organ, and those who, in consequence of a sedentary life, are precluded from exertion in winter, will feel their appetite fail from that cause.

But while excess, in the taking of food, occasionally occurs, the other extreme is too frequently met with, and where it takes place as a matter of choice, its bad consequences require to be equally pointed out. Penury of nourishment weakens the body, and accelerates the consumption of life. The fluids acquire an acrimony, the saline parts of them act upon the rest, and hasten the process of putrefaction, to which they are naturally prone. Hence, after abstinence, the breath acquires a fætor, the excretions are sparing and smell strong, and the body shews a tendency to fever of a putrid nature.

Abstinence also, in civilized life, produces a weakness of stomach itself, which is attended with a disgust and aversion at food. As this weakness extends, all the symptoms of premature old age are produced, even where it is in a degree not sufficient to produce disease; so that the extreme of temperance proves equally hurtful as the excess of gluttony.

With respect to the quality of aliments, whether of an animal or vegetable nature, the proper rule is certainly to chuse those that are most easily assimilated to the animal fibre. All substances, therefore, of an indigestible nature should in common be avoided, and the appetite

be confined to those that contain much of a gelatinous quality, and do not abound in the hard, watery, and saline part, which does not bear an easy or plentiful conversion into chyle. At the same time this requires restriction, and may be also carried too far. It is proper, that a due mixture of the dense and readily soluble aliment take place, in order that a sufficient permanence of stimulus may be conveyed to the stomach as well as a supply of nourishment to the system. Hence the rule to eat but of *one* dish at a time, however it may suit the invalid, is by no means suited to a healthy and vigorous stomach; and with respect to simplicity of dishes, their preference depends entirely on the quantity and the quality of the nourishment they convey; as the stomach is fitted to act upon every mixture, provided its solution is such as to allow it to be acted upon. The best rule, therefore, for the quality of food is the effect it has upon the stomach; and that kind of food should be always allowed which seems to agree best with the individual, and is easily digested by his stomach, in which a great peculiarity often prevails. It is the usual practice to begin meals with the most soluble viands, as soup or broth, and to take the more solid food for the after part. This practice is founded on a just discrimination. By the liquid nourishment the immediate wants of the system are satisfied, and the digestion of the solid nourishment goes slowly on, and its stimulus

mus on the stomach keeps up the tone of the system for a sufficient time, till the necessity for another meal ensue. The use, therefore, of soups and broths are highly proper; and, where the stomach is weak and irritable, by a proper use of condiment they should be prevented from tending to acescency, and no vegetables at the same time introduced into them that can favour this morbid change. With attention to these circumstances, they will in every case be found useful.

REGULATIONS OF MEALS.

The regulation and number of meals differs much in different countries. Hunger, no doubt, in all cases, should form the obvious inducement to food; but civilized life has in modern times yielded more to custom and convenience than to the regular intimations of appetite; and appetite again, with a courteous acquiescence, becomes soon habituated to the rules, which custom in this respect, lays down.

The antient Greeks and Romans are said to have had four meals a day.---Besides breakfast, the Romans had a slight meal at mid-day, corresponding with our *lunch*; and about three or four in the afternoon, supper, the principal meal, was served up. They had a slight repast in the evening, though it was not general, something like a *sandwich* in modern times.

But our British ancestors made the business of eating a still more formidable task, and their meals extended to five a day---not of a flimsy or slight nature, but consisting all of the most solid and nutritious aliment. Their breakfast was commonly finished at an early hour, and dinner accordingly came on about eleven or twelve o'clock. What they termed a *manchette*, or refreshment, was consumed in the afternoon; supper next came on; and the day was finished with another refreshment or *manchette* after it; and the earlier the different hours of these meals took place, marked the greater rank of the person. In modern times, we seem to have followed the example of the Romans. The only difference is, that with us dinner is considered as the most plentiful meal, while supper is preferred by the French and Italians, correspondent to the Roman practice. The most plentiful meal, however, should certainly be made in the middle of our time, or at an equal distance between day and night: we can more easily digest a heavy meal in the course of the day, than immediately before going to rest.

Interval between Meals.

The intervals between meals should never be protracted beyond three or four hours, for in this time we find the process of digestion generally completed. Thus in the morning the body feels weak and enfeebled from the long period of fasting during the night; a supply of nourishment, therefore,

therefore, should be thrown in, by breakfast, as soon as we get up; and the solidity of this meal should be regulated by the time of dining; for if dinner is protracted to a late hour, as the etiquette of fashion demands, it should be made a more nutritious meal than it generally is. The interval between breakfast and dinner is the proper period for exercise; and the enjoyment of it in a moderate degree will strengthen and invigorate all the powers of life. It particularly promotes the appetite and increases the circulation; but where too violent, and the body becomes exhausted by fatigue, the stomach feels its effects in the same degree with the rest of the system. Wherever much exercise is used, it should be finished some time before sitting down to a meal, for this should be enjoyed in a serene and disengaged manner, as far as circumstances will allow.

Conduct subsequent to Meals.

The conduct to be observed subsequent to a meal, and particularly to dinner, has much engaged the attention of writers, and a variety of contradictory rules have been given on the subject. In order to judge properly of this point, we have only to consider the circumstances which succeed a full meal in the human subject, joined with the example of other animals. In all animals rest seems the natural state which succeeds eating; and every animal either lies down or stands still, for some time, to enjoy it. Reple-

tion and fever are the two circumstances which succeed a full meal in man. This fever is perceived by a certain sense of coldness, varying in degree with different persons as soon as digestion commences. The pulse also experiences some little alteration, and in particular habits an increased irritability takes place, so that the nervous and hypocondriac are often at this period seized with symptoms of oppression and a tendency to faint. By this increased action of the heart, a natural torpor of the animal functions comes on, producing sometimes even a tendency to sleep. This state is greater from animal than vegetable food; and its duration is regulated by the quantity taken in, and the degree of repletion, and by its solubility or resistance to the action of the stomach. This fever of digestion affords a principal cue to regimen. Where none takes place, or but in a slight degree, the use of other stimulants may be indulged in, to excite what appears a necessary step to digestion. Where too strong, or a morbid stimulus present, this fever is then to be counteracted. From this view, every circumstance forbids the use of exercise for some time after a full meal. With active people, and those of strong habits, the intermission of an hour may be sufficient; but in the weak and delicate no strong exertions should be employed for a much longer period. Not satisfied with merely resting after dinner, it has been a question with many how far sleep

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is not even a proper practice. This prevails much with many of the natives of the warmer climates. So attentive were the ancient Greeks and Romans to rest, in this particular, that they even used a reclining posture in the time of their meals; and they prepared also for their meals by changing their clothes, and putting on a particular dress. With respect to the propriety of carrying it so far as sleeping, it would be introducing a practice which is only admissible under certain circumstances. Where a person has passed the meridian of life, a short sleep will allow the digestion to proceed uninterrupted, and the nourishment to give its full supply to every part before being again dissipated by the action of the body. On this account, in the warmer climates it is always advisable; but in this country, in young people, and those of a sedentary habit, it may certainly be dispensed with. Weakly persons, however, and those who are in the class of invalids, will receive particular benefit from it. Where indulged in, it has also been questioned, whether it should be enjoyed in a reclined or a horizontal position. In the horizontal posture, it is alledged that, from the pressure of the stomach on the intestines, the blood may be impelled to the head, and accumulated there: but if a proper attention is paid to remove any pressure from the region of the stomach, this effect will never take place; and the horizontal posture is cer-

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tainly in every respect preferable. As the sense of distension from food seldom exceeds an hour, the sleep should not go beyond that time.

ANIMAL FOOD.

After these introductory remarks on food in general, we shall now consider the first species of it, or *animal food*, more particularly.

Animals of all kinds are eat by the inhabitants of different countries, not excepting even vermin apparently of the most disagreeable nature. This general desire for animal food can only proceed from an instinct of nature for it; and in a cold climate the restrictions to its use should by no means take place in the degree that some authors have recommended. The general effects of animal food we have already touched upon. In this country it has been considered as giving origin to several of the diseases which are peculiarly frequent in their appearance, particularly scrophula, or as it is termed, scurvy, and consumption. Late experience, however, has shown that these ideas are entirely hypothetical; that such diseases are most frequent among the poorer classes, whose quantity of animal food is restricted by their situation; and that they are also equally frequent in country as in town, though a greater proportion of vegetable food is employed in the country. These diseases occur also at a period of life when animal food is not the principal part of

of the diet; and physicians of late, justly founding their opinions on these facts, and on the impoverished state of habit which marks these diseases, have recommended animal food as a principal means of cure. With respect to real scurvy, such as it appears at sea: it is a disease little known at present; it is found entirely to arise from a want of vegetable acid, and also from an impoverished state of the fluids. Hence, though it took place formerly, when much salted animal provision was used in diet, it has never almost shewn itself where the same food is used in a fresh state. And where it appears on land at present, so far from being the production of animal food, we find it alone in those abodes of wretchedness where *tea* and its concomitant vegetable diet, *bread*, forms the only means of nourishment. These diseases, therefore, are to be ascribed to the varying state of our atmosphere, and other irregularities in our own conduct giving influence to this cause. At the same time, a too frequent and excessive use of animal diet cannot fail to dispose the fluids to putrefaction; but these effects in modern life are much counteracted by the different ways in which animal food is prepared, and the various matters with which it is blended. Even the ferocity of mind displayed by the Tartars and other nations living entirely on this food, as well as the known fierceness of carnivorous animals in general, does not apply to the use of it in modern life. In

certain circumstances, however, it will be proper to limit the quantity of this food. Thus the sedentary and nervous should by no means indulge in the same proportion of it as the active and laborious; and nurses and children should be restricted in a similar manner. To give rules, however, for the exact proportion that ought to be employed, is impossible; as this must be regulated both by the various circumstances of the individual, and the manner also in which it is prepared. To allow but one part of meat to three of vegetables, is a maxim that will be little followed, and is at the same time insufficient for preserving a proper vigour of habit in this climate.

Animal food, as well as vegetable, differs much in its particular nature and qualities. This difference lies, in general, in two circumstances; in its degree of solubility, and its alkalescency.

With regard to its Solubility, it depends on,

1st. *The degree of preparation it receives before going into the stomach.* This consists in its proper mastication, or being comminuted to a sufficient degree, by the action of the jaws. In the hard and tough parts of animals this is particularly necessary; and indeed many stomachs, in which the gastric fluid is rather inactive, are unable to digest at all without this preparation is properly put in practice; and the food is often thrown up in the state in which it was received. The necessity for this preparation is perhaps the best

best argument that can be used in favour of artificial teeth where the natural ones decay.

2. *The age of the animal.* Thus it is evident that the tender and succulent fibre of young animals will be more readily soluble than the flesh of old animals. Lean meat, also, from the fibres being more dense, is not so soluble as that of fat animals, in whom there is a greater interposition of cellular matter, and a greater quantity of fluids present.

3. *The time the meat is kept.* On the extinction of life a density of fibre takes place. New killed meat, therefore, is hard, tough, and not easily broken down; but this state comes to be removed so soon as the process of putrefaction begins, which loosens the connexion of every part. No animal food, therefore, should be used in this country till it be kept some days; and in wild animals this rule is often carried too far, so as to render them almost unwholesome for use. In the warmer climates, where excess of heat renders the process of putrefaction too sudden, the meat is used in its best state before life is almost extinguished, while yet warm; and before the density of fibre has yet taken place. It is on this principle, perhaps, the practice related by Mr. Bruce, with regard to the Abyssinians, proceeds---that their meat is eat from the animal while yet living, and consequently full of tenderness and juice. The exact time during which
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meat should be kept must be regulated by the situation of the climate and season.

4th. *On the manner in which it is dressed.* Roasted meat is always the most soluble; and the less it is done, its solubility and nutritious quality is greater. The process of boiling renders the fibres more dense and indigestible; but at the same time, by imparting the nutritious portion of the meat to the fluid, it gives a quick supply of nourishment to the system, though not in the most permanent state.

5th. *On the degree of viscosity in the animal juice.* Hence the gluey viscid parts of animals do not admit a very extensive use; as they are more difficult of digestion than those that are more watery, and they remain longer on the stomach. In the use, therefore, of purely gelatinous substances, as giving rather an excess of nourishment, we must be more sparing than in the other parts of animal food.

6th. *On the quantity of oil.* Though the solubility of animal food is increased by its fatness; yet, when this oil separates from the other parts in the dressing of it, it is apt to become rancid and difficult of mixture in the stomach. Hence frying and baking are two forms of preparing meat which make it sit heavy.

The Alkalescency of animal food, the second difference taken notice of, is found to depend,

1st. *On its manner of feeding.* Thus from the very high alkalescency of carnivorous animals
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which feed on each other, their flesh is commonly avoided as food; and even where any of these are used, as some species of birds, a diet of them cannot be continued for any length of time.

2d. *On the difference of its age*; for all old animals are found more alkalescent than young, from the natural progress of age towards putrefaction.

3d. *On the domestication of the animal*. Thus tame animals are less alkalescent than the wild ones, from the greater variety of the food of the latter, from their greater proportion of exercise, and also from the particular manner in which wild animals are killed; the blood, a highly alkalescent part, being generally retained.

These, then, form the chief differences in animal food; and from this view it appears, that the nutritious part of animals consists in their jelly and mucilage, and that all animals, according to the proportion of these their flesh affords, are more or less nourishing. The method, therefore, by which this gelatinous part is most easily separated, and in greatest quantity, is the preferable mode of preparing them. This method is certainly roasting, by which the strength of the meat and juices are retained, and none of its balsamic particles allowed to evaporate. By boiling, the gelatinous substance is extracted and dissolved in the fluid, while the meat itself loses almost the whole of its nutritive qualities.

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Where, again, the gelatinous part is separated by itself and formed into a substantial jelly, though it contains the chief part of the nourishment, yet it is difficult to be digested. Roasting is, therefore, preferable; and perhaps stewing comes next it, by which the different parts are, as it were, concentrated and preserved without any of the inconveniencies of the other methods taken notice of. The other methods of preparing animal food consist of baking and frying; the former, though it gives to the meat all its nourishing quality, by preventing evaporation from the part that covers it, yet this process renders it heavy and indigestible by the stomach; and in baking also a good deal of the oil separates from the meat, which falls to be taken in its pure and indigestible state. Baking should be confined to those meats, as venison, and the flesh of animals which are naturally dry, and which would suffer by the evaporation of their thinner parts in roasting. Frying is something similar to roasting; but the meat is more deprived of its nutritious quality, and the oily part separating often, acquires from the fire an empyreumatic taste.

In considering animal food, it is properly divisible into four kinds; *Quadrupeds*, *Fowls*, *Fish*, and some of the *amphibious tribe*.

QUADRUPEDS.

Quadrupeds afford the greatest proportion of, and also the most permanent nourishment. In the choice of quadrupeds more than of other animals different nations shew a peculiar taste; and certain of them are more generally reared for domestic use than others. Carnivorous animals are commonly avoided by all nations, from their general unpleasant taste and disagreeable smell.

The chief part of quadrupeds preferred in food is the muscular part, as being the most nourishing, the best flavoured, and the easiest digested. The internal parts are also occasionally employed; but in respect to these we may observe, that they form but a tough and indigestible nourishment. The *lungs* are solid, and difficult to be reduced to solution. The *liver* is also a compact substance; of a dry, and, as it were, earthy consistence; though in some animals, it must be allowed, it is more soluble and juicy than in others. It was a part especially preferred in times of Roman luxury; and the animals were even fed in a particular manner to increase their size. The *heart* possesses a strong tough muscular fibre, difficultly reduced to solution, and only fit for a very active digestion, and that assisted by much exercise. The *kidnies*, though solid and compact, yet differ somewhat according to the age of the animal.

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In young animals they are often tender and well tasted. The *tongue* is a part which excels all other in its delicacy and flavour; but from being generally used in a dried and salted state, it is for the most part indigestible. The *intestines*, being of a tough membranous nature, are not easily reduced to a tender consistence; and even when they are, they give out but an insipid and insufficient quantity of nourishment. The *fat* and *marrow*, though requiring strong powers of stomach, afford a rich wholesome nourishment, and they are well adapted to those who use much exercise. In weak stomachs they are apt to lie heavy, turn rancid, and produce complaints of the stomach and bowels. Oil and fat we know constitutes a considerable part of our food; and is deposited also in considerable quantity in different parts of the body. However, therefore, it may affect the stomach when used in excess, introduced into the system at large it is certainly productive of much benefit, and counteracts many of those evils which would arise from the too active operation of other agents. Thus the acrimony of scurvy has been retarded by it. Pulmonary consumption is rarely known among those professions where much oil is used; and, according to a late opinion contagion is found much weakened by its combination.

The *blood* of animals is considered by many authors as insoluble, but when we analyse its composition, it cannot fail to be highly nutritious. It is, however of a more highly alkal-

lescent

rescent nature than the other parts of the animal. Hence by the Jewish Legislature, the principle of life was regarded as residing in it. It was prohibited therefore by the Jewish law, and we may observe that a scorbutic constitution, was formerly more frequent when blood was much in use in diet. In its recent state it is also said to possess an inebriating quality.

With these general introductory observations, we shall next examine the principal quadrupeds employed in diet.

COW KIND.

The *cow kinds* of animals is much used in diet, and in two different states as taken either from the young animal under the name of Veal, or the mature animal under the name of Beef. The northern parts of Europe produce the best cattle of this species, and they stand cold much better than heat. In Britain they have been particularly improved by mixture with those of other countries.

Veal,

Affords a cooling nourishment, of a somewhat laxative tendency, though less perfect than that of the animal in its mature state; its flesh in making a choice of it, should be white, juicy, tender plump, and well tasted. The age of the animal should not exceed six weeks, and its feeding should be confined entirely to milk. To this circumstance the Romans were particularly

cularly attentive, and calves were reared by them on this food alone, to the age of six months. At present where they are wanted quickly fattened, as in four or five weeks, a few raw eggs are daily given them with boiled milk and bread. The chief property of veal consists in its quantity of gelatinous extract, which renders it therefore highly useful to those in a convalescent state, after fibrile diseases in the form of veal broth, or jelly, with the addition of a little acid. On the same account it is also properly recommended to persons of a lax, thin, fibre, who are subject to hemorrhage, and pectoral complaints.

Particular parts of it, as the *liver*, the *lungs*, and the *tongue*, form a delicate, and more easily digested food for invalids, than the flesh itself, and are of a mild soft nature.

To preserve the fat of veal light on the stomach it should never be boiled, as by softening too much, it separates the jelly from the other parts. By roasting, the several parts are more uniformly preserved together, and the process of digestion therefore more easily goes on. To people in health, veal either roasted or baked is the most proper form of preparing it, and the part of the animal preferred for the former is the *breast*, or *kidney piece*; but to render it easily soluble, and assist its digestion, some vegetable acid is generally used along with it, as lemon juice or vinegar. Veal never gives the sense of a full meal,

meal, and the stomach sooner feels a return of appetite than after any other animal diet, it is therefore better suited, as a diet for the sedentary and delicate than for the robust and laborious.

To render the flesh of veal more delicate, it is the common practice to bleed it frequently and to feed it under the restraint of confinement, and an entire exclusion from light. That a sickly insipid flesh may be produced in this way, there is no doubt; but that either its delicacy, or nourishing quality can be improved by such means, no one will attempt to say. It is the wanton caprice of appetite, desiring superior enjoyment, and not knowing how best to attain it.

Beef.

Affords a strong, but wholesome nourishment, it should be tender, fat, and well mixed; and it should be taken from a bullock of middle age, or about five years. This is preferable to the cow, the flesh of which though equally soluble, is not equally sapid. Where taken from the bull, or from an aged bullock, that is above 9 years, (for from 3 to 9 is the period of vigour, more especially if fed in the stall) the flesh is highly indigestible, and too dense to admit an easy solution in the stomach.

Beef is more generally acceptable to the taste, than most other species of animal food, and by some is said most nearly to resemble the human nature; it is good at all seasons, and we continue longer
to

to relish it without disgust than any other kind. The particular flavor of beef, depends much on the feeding on which the animal is reared. When fed upon turnip it often acquires a peculiar taste, and when fattened with the refuse of distilleries, the fat becomes too soft and oily, and is too much accumulated in the cellular membrane, more than in the other parts. Beef is the most proper food for the strong, and laborious, and predisposes much, where eaten to excess, to heat, and inflammation. Of its different parts, its *fat* is easily digested, the *tongue* and also the *tripe*, being of a more dense texture than the other parts, are more indigestible, and therefore an unfit aliment for weak stomachs. The best mode of preparing beef, is roasted, or boiled, and in the latter form it is even lighter than the former.

In this country this animal was formerly met with in a wild state, but it is now entirely domestic. It grows to most size and vigor, in a temperate climate, and English Oxen are therefore superior to any other both in size and taste. Every part of the animal almost is applicable to some domestic use.

SHEEP KIND.

The sheep, like the cow kind, is employed in two states, either as mutton or lamb.

Mutton.

Gives a good nourishment, and is more easily
both

digested than beef, being the whitest of all animal flesh. The flesh of the castrated animal, or *wether*, is preferred both to the *ram* and *ewe*. Mutton is more sapid, and more easily digested, the farther it is advanced to maturity, or has passed the age of two years. It is indeed best between three and six years. The feeding of sheep has a particular influence on the quality of the nourishment they convey. A dry pasture, and a saline impregnation from the sea, greatly improve the flesh of sheep in wholesomeness and flavour. The meat of the ram is tough, and strong tasted. The weather when too young, is also tough and wants that rich and concocted juice, peculiar, in this animal, to age. No animal is so subject to disease as this, a circumstance to be attended to particularly in using it. And in health the fat of it should be of a fresh white colour, and the lean of a lively bright red. Mutton is equally good either roasted or boiled, and equally digestible. When to be roasted, it should be previously exposed for some days to the air, which greatly improves it to the palate, as well as increases its solubility in the stomach. From its tendency to coagulate, the fat of mutton is more apt to lie heavy than that of beef, but it is frequently of great service boiled with milk in dysentery, and complaints in the intestines. The feet of the animal are often boiled to form a jelly for the same purpose.

The species of this animal since it became domestic, are perhaps more numerous than those of

any

any other animal. In point of delicacy, the meat of Scotch, and Welch mutton is preferred.

Lamb,

Is a light cooling, though not very nourishing food. It is best when six months old, provided it has been allowed to suck its mother during that time; it contains then more nourishment, and is more easily digestable. It is generally, however, eat much younger, when it is properly joined with vegetable acid. House lamb the production of modern refinement, is an insipid, tasteless aliment, and unwholesome from the manner in which it is reared.

PORK

Was perhaps the first animal reared for domestic use; and the ease with which it is fed, and its being so common in savage life confirms this. It is an animal food peculiarly distinguished by its quantity of oil, and, where properly digested, conveys therefore much nourishment. It should be large, fat, tender, and, as far as can be learnt, clean fed. There is here less difference in the sexes of the animal than in the others we have hitherto mentioned; for the flesh of both is nearly equally good, nor is it much improved by castration. With respect to this aliment, however, the stomachs of many people
are

are peculiar. In some the digestion of an oily matter is great, while in others it is extremely limited.

It is therefore a diet not suited for weak stomachs, or those of a sedentary life. Its use also has been considered as disposing much to putrescency, from the natural inactivity of the animal, and its gross manner of feeding; but this, we are persuaded, on no good foundation. Hence it is considered as particularly predisposing to cutaneous eruptions. The opinion of the ancients, however, differs much from the moderns in regard to the flesh of this animal. By them it was esteemed as the most wholesome of all nourishment, and as conveying most strength and vigour to those who fed upon it. Hence it formed the chief food of the *athletæ* or wrestlers in ancient Rome, who complained of a sensible decay when they disused this food for any time. The same opinion seems to be entertained in modern times in some counties in England, where the servants are articulated to feed chiefly on this diet, a proof, in vulgar opinion, of the strength and vigour it is found to convey. But the flesh of this animal must differ considerably in different countries, from the different food on which it is fed, and from the different state in which its flesh is prepared and used. As the native of a warm climate, its flesh will be there the most delicate, and best used in a fresh state. In a dried state, or as ham, it is much

much less soluble than when fresh, and boiling it renders it even more indigestible. Salt and smoking, by depriving it of its gelatinous, and of a good deal of its oily parts, renders its fibres hard, diminishes its nutritive quality, and makes it lie a load upon the stomach.

Sausages are liable to the same objections as a wholesome nourishment. They are of themselves not easily reduced by the stomach, but from the spices in their composition giving an increased stimulus to the organ, their bad effects are in part counteracted.

Bacon, or the simply dried state of this animal, is generally of a rancid nature, or turns so on the stomach. It cannot fail, therefore, to be highly pernicious, particularly where stomach complaints prevail.

Lard, which is the softer part of the fat of this animal, is very liable to rancidity, and therefore improperly used in cookery as a substitute for butter.

A peculiar preparation of pork is brawn, which though difficultly soluble in the stomach, yet affords much nourishment. It seems to consist chiefly of the adipose membrane, strongly compressed, so that much of the oil is squeezed out of it, and the cellular texture then remains so closely united as to form a transparent substance.

These objections, which apply to the hog in its domestic state, by no means apply to the wild animal, the flesh of which is both more palatable, less tough, and of much easier digestion.

It is proper for those who have much fatigue, and who require the stimulus of their food to remain some time in the stomach.

Pork, in moderate quantity, may be safely eaten by most people who are not in a state of disease. It is only when it becomes a constant or continued diet, and where the quantity used is considerable, that it is apt to produce injurious effects. Its use is also properly accompanied with a proportion of vegetable acid, which will give it a more agreeable relish, and render it much lighter on the stomach.

Pork is an animal of a peculiar make; it is only of use to man as food. This food, however, has been much disliked by some nations, particularly the Egyptians, and after these the Jews; arising, perhaps, from its disagreeable appearance, its manner of feeding, and its alledged tendency to disease, though this is not confirmed. By other nations, particularly the Greeks and Romans, it has been equally prized. It is in its nature of a tender texture, continues always so, even in its adult state, and gives out a jelly in very great quantity.

GOAT.

The goat is an animal of a dry, unpleasant taste, and therefore seldom used in diet. Where it has been, it is only when improved by castration, for then it fattens, and improves in

flavor; or else as a kid, the age of which should not exceed six months. Where used so early, it much resembles lamb in taste, and in the warmer climates is substituted for it. The feeding of the animal being more varied than that of most others, renders its flavor peculiar. Its age like that of the sheep is about 8 years.

VENISON.

Of venison there is a considerable variety, the flesh is much the same in its general properties of being stimulant and alkalescent, only differing in degree. The species commonly numerated are 3.

The Roebuck,

When young and well fed, affords a nourishing and easily digested food, which agrees with most constitutions. It is in general not so fat as the other kinds, but is delicate, tender, and most agreeable to the taste. This animal is particularly distinguished by the quickness of its sight, a proof of the wildness of its nature, which forms, as it were, the means of its defence; guarding it against surprize.

The Fallow Deer

Much resembles the Roebuck, and like it should be young, and fat, though, in point of taste, it is somewhat superior in flavor. The principal
part

part of it for use is the haunch, it is best in the winter season, and like all others of this kind, which are rather of a hard, dry nature, in using it it should be baked.

The Stag

Is of a dry, and strong alkalescent nature, from its great exercise. It is best used very young, or when this is not the case, its flavor, and solubility are generally improved by keeping, but its age should never exceed three years. Autumn is the time in which this food is in highest perfection, as the nourishment is then most abundant for the animal; and vulgar prejudice has attributed to it the supposed quality of contributing to prolong life.

Like that of other animals the flesh is improved by castration. The horns afford a nutritive jelly, highly beneficial, when properly prepared, for invalids.

The alkalescent tendency of venison, and other wild animals is best corrected by vegetable acids, either vinegar or lemon juice.

HARE.

The flesh of the hare is dense, and not easily soluble, and particularly when it is killed after a long chase, so that the oil in the cellular membrane is mostly expended. No hare should be used after a year old, and the flesh of those that

that are bred in mountainous situations, are preferable to that of any other; the flesh also eats better in winter than in summer.

RABBIT.

Rabbits are of two kinds, the tame and wild. The former though fatter, and more tender, are apt to be rank in the flavor. The latter, from the variety of their food, are more agreeable to the taste. The flesh of rabbit is reckoned equally digestible with fowl, and of course equally proper; they are best when young or middle aged, and are more in season in winter. They are proverbial from their prolific nature.

GENERAL REMARKS ON THE FLESH OF QUADRUPEDS.

We have now examined the principal quadrupeds used in this country as food. They afford the richest and most permanent nourishment, and this nourishment has been brought to the highest perfection by their domestication. But in proportion as it contains an excess of the nourishing principle, it requires a moderation in its use; from its strong stimulus on the system, it naturally predisposes to inflammatory

matory disease, unless aided by much exercise, and its action is also prone to induce a plethoric state. The most nourishing form of this food is certainly raw, as both its solubility and stimulus are greatest, and this has been proved by the experience of persons, who have been obliged from disease to eat it in this state; and meat, therefore, least done is most wholesome. But modern taste differs from this opinion; the excess of cookery at present lessens the nourishing quality of this food, and in this way perhaps may be said to counteract the excess of stimulus which this kind of food is so apt to produce. The same observation may be made on the time during which it is kept. By this the flavor is no doubt improved, and the denseness of fibre softened, but the nourishment then conveyed is by no means so wholesome. This taste is carried by the French to an extravagant length; but by them again it is in part counteracted, by the greater proportion of vegetable food they conjoin with it, and the weak acid wines they drink. Tainted meat can be only useful to these stomachs, who are oppressed with a viscid, insipid phlegm; or who generate an acrid, corrosive acid. All the wild animals may be considered in the light of tame animals long kept. From their mode of life their juices are in that exalted state, which tend soon to putrefaction, and allowing this process actually to take place before using them,

is.

is neither necessary nor wholesome. The meat of quadrupeds, we find stronger, or more alkallescent in proportion to the size of the animal. Quadrupeds also, are mostly at all times in season, which other animals are not; and of quadrupeds, mutton is preferable to all others, as better suited by its constitution to varieties of climate, than the other kinds. Thus beef requires a nice, intermediate state of climate, and is therefore best in England; while pork, a native, properly, of a warm climate, though rich and nutritious in Britain, wants the delicacy and flavor it possesses in the warmer regions. Mutton on the other hand is equally fine when reared on the bleak mountains of the North, as when fed on the rich pastures of the south. The chief fault at present is, by intermixture the producing for the sake of the size and the covering, a species too gross and rich, and wanting the peculiar and natural flavor.

The difference in the relative qualities of quadrupeds is in some degree determined by their food. Thus the cow delights in the succulent herbage of the vale, and yields accordingly a nourishment, rich and well tasted, but with nothing peculiar in its flavor. The sheep forsaking the vale, where he is in danger of the rot, and of becoming diseased ascends to the high and dry side of the mountain, where his flesh acquires a relish, and flavor superior to that of the cow, while the goat leaving every thing below,

below, prefers the craggy side of a steep cliff, where he broozes on the wild herbage, which occasions his flesh to have little succulence and rather a strong, and unpleasant flavor.

The hog, more domestic than either, varies in the goodness, and flavor of his flesh according to the particular feeding that is given him. In a cold climate he acquires from grain, and the refuse of the dairy, richness and succulency but he wants the peculiar delicacy, which his flesh receives from the influence of a warm climate, and feeding on fruits, or the refuse of the sugar cane.

FOWLS.

Under this head we comprehend all fowls, though it applies more properly to the domestic kind of birds in general; they afford the same nourishment as quadrupeds; but not in the same degree. Those that fly are to be considered in the same light as game, or the wild quadruped. Much also depends on their mode of feeding. Those birds that live on insects, worms, and fishes, give but a meagre and gross nourishment. Those that live on fishes are next to the former, but those fed on grain, and berries, are reckoned the most wholesome, and delicate feeding. All birds are improved by being domesticated as they grow fatter, and more muscular though they lose somewhat of their original flavour. Birds are almost never in season in spring. For use they are preferable young, when they should be roasted. When old they are most fit for broth, or they may be stewed, but the flavour of fowls is generally impaired by boiling. The smaller kinds that do not admit roasting, are best baked. Of the parts of birds the wings of the flying kind are driest, and insipid; and, in the same way, of the running kind, the legs are the worst part, as being the most exercised; hence the breast is in all of them
softest.

the softest and most nutritive part. The flavor of birds is peculiarly lost by domestication, while their fleshiness and tenderness is on the contrary improved.

HEN.

The Galinaceous tribe is the most used in diet, and is the most tender, and least alkaliescent of all animal food. Thus the flesh of the young, or chicken about 3 months old is allowed to invalids; when the irritation of all other animal food would prove hurtful. Its flesh is white and delicate. It sits easy on the most weak and debilitated stomachs, and affords a mild and innoxious chyle. The difference of age in the flesh of this animal is very striking, for after a year old it becomes daily tougher, and more insoluble. The cock is only used after that period for making broth or soup. The difference also of sex after a year is equally remarkable, for before this period the cock and hen eat equally well. Much difference likewise arises from castration. The capon and pullet are the most delicate of all dishes, and preserve the flavor of the chicken with the maturity of age. They yield a rich good chyle, without any tendency to heat, being much like that of the chicken; but richer and of a better flavor.

This species of fowl being so much used, undergoes often a particular management for the table when it is termed a crammed fowl, this

last is certainly more sapid and tender, than the barn-door fowl, though perhaps not so delicate in its flavor. In this fowl there is a greater variety in the size and appearance than in most others.

GUINEA OR INDIA FOWLS.

Afford a nourishment very like the hen, if taken at a certain age, but somewhat stronger, and consequently more difficult of digestion, particularly the legs and wings; they are commonly used roasted, and are filled with some kind of pudding, or forced meat, which increases their insolubility.

TURKEY,

Very much resembles the Guinea fowl, though it is somewhat denser in its fibres, and consequently less soluble and more alkalescent. It is generally dressed in the same manner as the former, but when old, it is better stewed. It is originally a native of Africa, but has been reared with great advantage in this country. The Norfolk turkeys are often brought to a prodigious size: like the Guinea fowls, when roasted, they are generally filled with a pudding, which is liable to the same objections.

PEACOCK.

This is a bird rarely or ever eat : it somewhat resembles the two former species, but is inferior in tenderness and solubility : it formed anciently a principal part of Roman luxury, and that was perhaps from its scarcity or external appearance, more than from any superior quality.

PHEASANT.

The pheasant is less digestible than the domestic fowl, but is preferable in flavour, and more alkaliescent. It is best in autumn, and should be used roasted.

PARTRIDGES.

Are much valued for their delicate flavour : they are best when young. Of this species there are a great variety, but they differ little in their qualities as aliment. They are something between the pheasant and domestic fowl, being more tender than the former, and rather inferior to the latter :---they are reckoned highly proper as food for invalids and convalescents ; and before being used they should be kept some time, a circumstance often carried too far.

Besides the common partridge, some other kinds of game occur to be noticed, viz. the cock of the mountain, the red game, and the ptarmigan:

gan: they possess, however, all one common quality, varying somewhat in their alkalescency, and consequently in their degree of flavour and solubility. But to most persons they are a sapid, agreeable, though at the same time a high stimulant food.

QUAIL.

The quail much resembles the partridge, but is rather more juicy and tender. From its greater quantity of fat, it is also apt to lie heavier on the stomach. As it flies low, it is properly more a terrestrial bird than the others, and what is remarkable in this species is, that the proportion of males far exceeds the females..

GOOSE.

Of the anschrine tribe there are a great variety, and they are all alkalescent and stimulating, and of an amphibious nature, living either by land or water. The tame goose is the one most used: it possesses a strong flavour, and is highly viscous.. It is, however, more tender than the wild kind. Hence it affords an aliment which is considered as unwholesome, and the more so when it is fed and confined without exercise. It is therefore a diet not to be used by those who possess a tendency to inflammatory and cutaneous

ous diseases. The fat of this bird is almost totally undigestible. The solan goose, a native of Scotland, possesses a very strong odour and rank fishy taste : the flesh, however, is sapid and tender, and reckoned more digestible than that of the tame goose. When the skin in which the odour chiefly resides, is removed, this bird forms to many people an agreeable dish.

DUCKS

Afford a preferable nourishment to the goose. They are not so fat as the former, and take much more exercise. In rearing them they should be kept as much as possible from stagnant waters, which injure them. As food the wild species is reckoned better tasted and easier digested than the tame. To this species of wild ducks may be added the teal, but it is better tasted, and easier of digestion : the wings are reckoned the most delicate part of all these fowls.

PIDGEONS,

Are a great delicacy, and eat well at all times. In some parts of the world, as in Persia, they form a chief article of food. In Egypt also, it is a common proverb, that the husbandman who has a good pidgeon house need not be careful about the disposal of his daughter.

Of

Of this fowl there are a great variety of species, but the domestic pidgeon is more in use than any other. It forms a food of a very heating dry nature, is highly alkalescent, and is best when young. Pidgeons are at all times in season or fit for use and may be dressed in any form with equal advantage. The different species differ only in their degree of tenderness, but their general flavor and qualities are the same. So heating is the nature of this bird, that externally applied, it produces inflammation.

THE THRUSH

Is sometimes used as a delicacy at table, being caught for that purpose in cold weather. It was a favourite luxury of the Romans: it forms a light soluble nourishment, and is very fit for the stomach of convalescents. By the Roman epicures the hare was reckoned the favourite of quadrupeds, and the thrush of birds.

THE BLACKBIRD,

In point of delicacy, resembles the thrush, and is used much in the same way. This bird is very fond of animal food.

THE GNATSNAPPER

Is a tender delicious bird: it is best when young.

It

It imparts much vigour and strength to the stomach, and is a proper food for invalids.

THE LARK.

The flesh of the lark is savoury, and easy of digestion when young. This bird is generally caught in severe winters, and then only is used for food. It is either roasted or baked.

ORTOLAN.

The Ortolan is a bird of the most delicious flavour in the mild climates which it inhabits. In size it is about the bigness of a lark, very fat, and reckoned one of the greatest luxuries of the table.

STARLING.

The starling, when young, is occasionally used as a delicacy at table, but it is in general dry, and has nothing particular to recommend it as a superior species of food.

LAPWING AND PLOVER.

The Lapwing and plover are much preferable: they possess an exquisite and delicious taste, which is even greater in the plover. From their constant exercise, their juices are highly attenuated, and they possess very little of a gross or viscous nature.

MOOR HEN.

The moor hen is a food much relished; but, unless when very young and fat, not easily digested, and rather of a gross oily nature, which arises in part from the kind of food it is accustomed to. Of this fowl there is also a considerable variety; and their taste varies a good deal in different individuals, in some being very exquisite, in others rather unpleasant. They agree all in the general quality of being a solid nourishing food, which requires, if largely used, a good digestion, and much exercise to carry it off.

WOODCOCK.

The woodcock is a bird well known, and possesses a delicacy of taste which renders it a favourite at most tables. Woodcocks are chiefly used in winter, and in their general properties much resemble the partridge, though in flavour they are superior.

SNIPE.

The snipe belongs to this species, though not so large in size. It agrees with it pretty much in its general qualities and flavour.

EGGS.

As forming a species of animal food, belonging

ing to this class, eggs fall to be taken notice of here.

They should be new-laid, white and long; they are less alkalescent than any other animal food, and less stimulant during digestion. They contain much nourishment in small bulk; but it is doubtful whether they tend more than any other species of animal food to render the body plethoric. They are divided into two parts, the albumen or white, which corresponds to the serum or watery part of the blood. It is dissolved in a warm temperature, but considerable heat makes it insoluble. The yolk, the other part, contains much oil, and of course much nourishment. It is easily soluble, but has a strong tendency to putrefaction. Eggs are distinguished by the peculiar quality of singularly affecting some stomachs, even in the smallest quantity, while they produce no uneasy impression on most others. The eggs of hens are generally preferred to any others, but from whatever species of birds they are derived, they vary very little. Their flavour is pretty much the same, and any difference from each other, from difference of feeding, &c. is hardly to be distinguished, though it may take place in a slight degree. The solubility of eggs depends much on their dressing. To weak stomachs they should be only stewed for a few minutes, so as to be kept soft. They should be eat with a proportion of salt

salt and acid. All preparation, except soft boiling, renders them hard and indigestible, particularly frying or in pancakes. Tainted eggs are particularly noxious in some cases, especially the white, and that even in the smallest quantity, and they are always very hard of digestion. Various methods of preserving eggs have been employed: they consist chiefly in preventing the access of the external air, either by smearing them with butter, or immersing them in a fluid.

GENERAL REMARKS ON THE FLESH OF FOWLS.

Fowls afford a more wholesome and delicate diet than quadrupeds. It is easier also of digestion; but they afford at the same time a less proportion of real nourishment. Nor is their nourishment so general as that of quadrupeds, some parts of them being always tough and insipid, from their manner of life. Of birds, a greater number of the carnivorous kinds are eat than of quadrupeds; but they are, however, chiefly those that live on fish, from which indeed they acquire a peculiar taste, but this is
by

by no means so unpleasant as that of carnivorous quadrupeds. The time of using fowls requires more to be studied than that of quadrupeds, as they are frequently out of season, particularly in spring, when they pair; and where they are birds of passage, or migrate from one place to another, they require some residence, or to be in case, before they are fit for use.

Fowls as well as quadrupeds are much improved in size and fatness by domestication; but this is of two kinds---the first is making them familiar and allowing them to feed as they please, which in the hen kind is known by what are called Barn-door Fowls---the other is properly *cramming them*, that is, shutting them up for the sole purpose of feeding. These arts of feeding no doubt give more succulence and tenderness to the food, and increase its alkalescency. From giving succulency they are an improvement; but from increasing alkalescency, they render the food more unfit for weak stomachs and convalescents, by whom this species of food is much used, though at the same time they render it more easy of solution. Exercise is necessary to give perfection to all food, for by this means the fat of the animal is equally dispersed through the muscular parts; while, when fatted hastily, it is accumulated in the cellular membrane. By the domestication, also, of fowls in general, their peculiar flavor, on
which

which their excellence depends, is lessened; and by cramming them it becomes entirely lost. Hence also, unless their fibres are very tough, roasting is to be preferred to boiling them, on the same account.

FISH.

Fish is considered as holding a middle rank between animals and vegetables. It is also a nourishment nearly equally nutritious as meat; by some alledged to be more so; this has been equally doubted by others; while the truth of it is best proved by the health and vigour of the fishing villages that live pretty much on this aliment. Hence fish is a diet rather improper for those who practice mortification.

Fish, in its general texture, is more tender than that of flesh. It is also smaller, and can hardly be said to be fibrous. A considerable difference prevails in the firmness of the substance of different fishes, but this is not so considerable as in the different classes of animals, neither is this firmness of texture so altered by age as in the animal tribe.

Fish in general, as far as we are able to judge, is more easy of solution than meat; and, what is remarkable, broths made of fish, do not form into a jelly, though they are somewhat gluey and viscid, which causes them to remain long upon the stomach; neither, although retained long on the stomach, are they almost ever rejected or brought up. Of all animal substances fish, however, is the most putrescible; but the
putrescency

putrescency of fish is accompanied with circumstances somewhat different from animal putrescency, as it neither affects its solubility, nor increases its irritation upon the system. One peculiar effect, however, often attends the use of some kinds of fish, during the process of digestion. A considerable efflorescence is thrown out on the skin, sometimes partial, sometimes general, and either with or without some febrile disorder. This effect is merely temporary, and when the process of digestion is finished it departs. Its departure can even be hastened by the operation of a vomit removing the aliment. This effect is probably owing to the peculiar viscosity of fish increasing their stimulus on the organ; and, to counteract it, the propriety of eating them with oil or butter has been introduced, as it were, by instinct, rather than as a precept of reason. Fish, when compared with meat, is a less perspirable species of food. Their ease of digestion depends much on the particular kind of fish, and they have been divided, from their colour, into the white and red; the white being supposed less stimulent and the red more so; and also, from their habitation, into the fresh and salt water kinds, the former being reckoned the lightest and most wholesome. But such distinctions do not universally hold: The more tender and gelatinous kinds of fish are clearly more soluble and nourishing than those of a drier texture; and scaly fish are considered
more

more digestible than others. The feeding of fish also influences their solubility : those living in ponds, ditches, and stagnant waters, are less wholesome than river fish, whose element is purer, and whose exercise is greater. Fish bred in stagnant water, must naturally partake of their putrescent situation and nourishment. Salt water fish are more solid in their flesh, more agreeable to the taste, and have a more healthy and less putrescent nature ; but this is to be understood when used fresh, for when salted they become considerably changed in point of solubility, which is hastened by the stimulus of the salt, though their nutritive quality is diminished. Fish is much assisted in its digestion by the addition of acids and stimulants, in the form of *sauces* and *condiment*. Some authors have inveighed against the use of butter with fish ; but the peculiar action of fish on the stomach, already noticed, shews that what general consent has thus adopted ought not to be too lightly condemned. Where fish has become rancid, and lies long on the stomach, this is apt to affect the sweat with a rancid smell, as is found in the persons of those who live entirely upon them.

Fish differs from animals in being more frequently a food produced from carnivorous feeding than otherwise. Yet this circumstance does not seem at all to affect its qualities in the manner it does with animals ; for carnivorous animals can seldom be used, from their strong smell and

their unpleasant taste; but the element fish live in would seem to counteract the influence of this nourishment.

The most general division of fish, by writers, is into fresh and salt water ones; and it is probable that salt water is the natural element of all fish, though, from accidental circumstances, they have mounted up into rivers, and been habituated to this new situation; but, a proof of their original element, many kinds are obliged to return to it at particular times, and others entirely degenerate in this acquired situation. Fish, like other animals, are improved for diet, where it is practicable, by *domestication* and *castration*. The former is confined to the fish that are found in ponds, as the Trout, Carp, and Tench; and the latter, or the operation, also is chiefly employed on the same species. By this improvement they often acquire a considerable size, and become more delicate, plump, and juicy.

SALMON.

The salmon is a very extensive article of food, and is used in three ways, either *fresh*, *cured*, or *smoked*. It is of a tender substance, sufficiently succulent and nourishing, but at the same time somewhat oily, and therefore heavy on the stomach. It differs in its richness and alkalescency according to the particular places in which it is taken. When middle-aged it is in most perfection, and it should neither be eat too young nor too old.

Salmon

Salmon trout differs chiefly in being soft and gelatinous.

PIKE.

Pike is a fish of prey, and feeds on the smaller species. Hence it is termed the Water Wolf. Its flesh is short, compact, and close in its parts. The river pike is the best of this species, and considered as the least heating, though somewhat hard of digestion, and lying heavy on the stomach. It differs, however, much in different countries. It is also best in the winter season. This fish has been recorded as very long lived; a fact confirmed by the story of the one thrown into a pond by the emperor Frederick the Second, with a brass ring about its neck, which was caught 262 years afterwards. The truth of this, however, may be called in question.

CARP.

Carp is a fish very long lived, and was first introduced into Britain in 1514. Like the pike, the river carp is the best. It often grows to an amazing size, and has been known to weigh 200 pounds weight. It is best food in March, May, and June. It is not so dense as the pike, and therefore easier of digestion. The older it is, it becomes the firmer, better tasted, and more wholesome. From the spawn of this fish is made the *caveare*, a dish much used by the Jews. This fish can be made to live a considerable time

out of water, and will even, by a particular mode of treatment, grow fat.

PERCH.

The perch is a food superior to the two former, and is of two sorts, the river and sea perch. It is of a firm texture but a tender substance, easily soluble, not glutinous, not heating, nor remarkably stimulant. When young its flavour is best, which it loses by age, and becomes rather ill-tasted. The best for use are the middle-aged. They should never be used in the months of March or April, which is the spawning time. They are best caught in clear water, for marshes and muddy places vitiate their flavor.

WHITING.

The whiting is a sea fish, tender, white, and delicate, with little gluten or viscosity, and therefore proper for the most weakly stomachs, conveying little stimulus to the system. The best sort are short, and they are much valued as an article of food.

HADDOCK.

The haddock is a sea fish, and much resembles the whiting, but is firmer in its texture, and in general much larger in size. It is caught in high perfection in different parts on the coast of Britain, particularly in the month of January.

COD.

The cod is also a sea fish, of a more dense and glutinous texture than the two former, and its delicate parts are the *glutinous* ones about the head and the *sounds*. It is used of three kinds---the fresh cod, the green or white cod, and the dried or cured cod---the difference lying in the preparation of the two last, the one being salted and barrellled for use, the other being salted, and dried in the sun, or smoked. The green cod generally comes from Newfoundland; the dry cod, again, is taken on the coast of Placentia and Scotland. Both these kinds require to have their salt much extracted, by immersion in water, before being used. The pickle of cod is frequently used as an external application of a dissolving nature.

EELS.

Eels have no exercise, are fat and slimy; they contain much nourishment, but are difficultly perspirable; they are well tasted, but, from their viscosity, are apt to lie heavy on the stomach. They are dressed in a variety of ways, but are lightest when roasted, and should be well seasoned with condiment, particularly vinegar and horseradish, for when long retained on the stomach they become heating and oppressive. The best kind are taken in clear water. They are very retentive of life, and have been known

to live five or six days out of water. From the skin a mucilage is made, reckoned of sovereign virtue, by the vulgar, in swellings.*

TENCH.

The tench is a fish of a delicate taste. It feeds generally in muddy places, and is said to be the only fish that the pike spares. When it can be procured from clear water the flavour is always superior. It was much under-rated by the ancients, but in modern times it is esteemed as equal to carp. Its name it derives from the peculiarity of its colour.

TROUT.

Of this fish there are a great variety, but the salmon trout is the best, being soft and gelatinous, and at the same time somewhat stimulant and alkalescent. All trout, indeed, are a very putrescent food, and therefore easy of digestion. They should be eat in their freshest state, and taken, if possible, from running water. They are best in summer, for then they are in best condition, and their flavour most delicate.

* Man, that barbarous and unfeeling governor of the animal creation, exceeds his usual wantonness of cruelty by SKINNING, or FLEAING ALIVE, this helpless fish!! A less exceptionable practice would be to cut off its head, and thereby deprive it of life, previous to the operation of skinning.

BARBOTTE.

The barbotte is a delicate soft fish, that lives in rivers, and feeds on mud and slime. It is remarkable for the size of its liver, which is reckoned the most delicate part of it.

GUDGEON.

The gudgeon is of two sorts, the sea and fresh-water gudgeon. The latter is the best tasted, and the most nourishing, though both are soft and rather watery. In point of flavour, the gudgeon is inferior to the fishes already taken notice of.

SMELT.

The smelt is generally found at the mouths of rivers. It possesses somewhat of a violet taste, affords a good nourishment, and is easy of digestion. It is best in season in the end of summer and beginning of autumn.

LAMPREY.

The lamprey pretty much resembles a large eel, and is of two kinds, the sea and river lamprey, both of which are equally nutritious, and also equally delicate in point of flavour. It is a very short lived fish, seldom exceeding two years. It generally migrates from the sea to a
c 4 river,

river, to deposit its spawn; and then returns with its young to its former situation; though others of them never frequent a river. This fish was much esteemed by the ancients. They are best in season in spring. They are dressed in a variety of ways, but should always be used with wine and spices, which renders them light and easy of digestion.

MACKEREL.

The mackerel is a fish very abundant at particular times of the season, and, although nutritious, somewhat dry in its substance. It is most in use in spring and summer. When drest, from its hard viscous nature, it is generally preferred boiled. It possesses a strong tendency to putrescency, and should be used always as fresh as possible. It is found in greatest quantity on the French and English coast. Though generally used fresh, in Cornwall it is often pickled, and in that state it eats rather dry.

STURGEON.

Fresh sturgeon is reckoned in America a delicious dish, and in taste much resembles veal. It is often so large as to weigh 200 pounds weight. It possesses considerable strength in its tail. This fish was much esteemed by the Romans. The belly is reckoned the most delicate part of it. It is generally pickled, and exported from where it is caught in this state; but the

the great object of the fishery of it is the roe, from which is made the *cavear*, or *kavia*, so much esteemed by the Italians.

From the sounds of a species of this fish is prepared the *isinglas*.

HERRINGS.

The Western Isles and the coast of Norfolk are the chief situations for the herring fishery. They are of an oily succulent nutritious nature, and form a principal article of provision in many parts of the island, for the greater part of the year, particularly in the northern parts. This fish is remarkable for being less tenacious of life than most others, for as soon as it is taken out of the water it dies. It is used as food in three different states; either fresh, white pickled, or red pickled. Of the white pickled the Dutch are most esteemed: they should be fat, fleshy, firm, and white; and their superiority depends on their being cured the same day they are taken. The red kind are prepared by depositing them in brine 24 hours, after which they are taken out and strung up, so as to be exposed to the smoke of a chimney. In small quantities, the salt herring stimulates the stomach, and creates appetite, at the same time dissolving any viscid slime that is upon it. Herrings are full of roe in the end of June, at which time they are fat, soft, and delicate. They should be drest and eat the moment they are caught. The best are

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white,

white, thick, and short. In their heating quality they nearly resemble salmon, and quicken the pulse to a considerable degree, and also produce in some constitutions efflorescence. The luminous appearance of this fish at night is more remarkable than most others.

PILCHARD.

The pilchard is a small fish, larger and thicker than the anchovy, and very high flavored. They are much used as food in many countries, particularly in Portugal and Spain. They are very fat. They are best fresh, and lose much of their flavor by pickling.

ANCHOVIES.

Are chiefly caught in the Mediterranean and on the western coast of England and Wales. The summer months is the season of their being caught, and the night time is preferred for this purpose. In making a choice of anchovies, they should be small, round backed, white on the outside, and red within. They are used in three ways :---the first simply eating them with oil and vinegar, first boning them and taking off the tails and fins;---secondly, making them into sauce, by mincing them with pepper, &c.---or, thirdly, pickling them in small pots, and excluding the air, by which their flavour and taste may be preserved.

PLAISE AND FLOUNDER

Are both a white, soft fish, of a tender, succulent nature, and somewhat glutinous. This last quality is greater in the flounder than the plaise, though the latter is longer in size. They are found both in fresh and salt water, but the salt water kinds are preferred; when fresh they are easy of digestion, but if long kept they are said to acquire a laxative property.

SOLE.

There are few fishes of so exquisite a taste as the sole, and it has been therefore distinguished by the appellation of the sea partridge on that account. It is tender, short and firm, with a just proportion of its fibre, and oily parts. It is therefore easy of digestion, and affords a proper, rich nourishment. It should be used as fresh as possible, for then the delicacy of its flavor is greatest.

TURBOT.

Of turbot, there is some variety in size and quality, but in general it is a rich glutinous fish, moderately firm, tender, and juicy. It was one of the chief luxuries of the ancient Romans, and received the appellation of the water pheasant, from the goodness of its taste. It is always a sea fish, and chiefly found at the mouth of ri-

vers where it watches for its prey. It is rendered more palatable by keeping it a day or two.

ROACH.

The roach is in highest perfection in winter. It is fresh, delicate, tender, and of easy digestion. Hence it is used by convalescents, as being of a nutritive nature, and considered to have particular good effects in stopping diarrhœa, or looseness from a weakened state of the bowels. This can only proceed from its glutinous and somewhat oily nature.

SHAD.

The shad is a sea fish, though occasionally found in rivers, where it goes in spring, and there grows fat, plump, and savory. It is supposed, when fresh, to possess something of an anodyne quality. When kept it acquires a peculiar sharpness and acrimony. It is best in season in spring. This fish is particularly alarmed by thunder, and at the same time passionately fond of musical sounds. When pickled it loses much of its taste.

THORNBACK.

The Thornback is a fish much in use. It is somewhat hard, and not easy of digestion. It is

is therefore proper to be kept, in order to soften it a little, before being used. And for this purpose it is generally hung up and exposed to the air. It is best drest either by boiling or baking it, with the addition of acids, and condiment. It is supposed by some to have a particular aphrodisiac quality, or to provoke to venery.

BARBEL.

The barbel is a sea-fish that rarely weighs above two pounds. The smallest kind are esteemed the best. It is somewhat hard and difficult of digestion, but it is considered as a nourishing, durable food. It was particularly valued by the ancient Romans, with whom it formed one of the dainties of their table, and was bought accordingly by them at an excessive price. The parts of the fish esteemed most delicate, are the liver and the head.

TUNNY

The tunny is a fish chiefly found in the Mediterranean, and resembles in every respect the mackerel, but is more succulent and nutritious. It is firm, short, and of an excellent taste. The most juicy and delicious part of it is the lower part of the belly, though from its fatness this part does not suit every taste or stomach. This fish is said to be but short lived, and so voracious as even to devour its own young.

LUMPUS.

LUMPUS.

The Lumpus fish is remarkably glutinous, approaching in quality to the eel, and universally nutritious to those that use it.

GURNARD.

The red gurnard is a remarkably sapid fish, also considerably nutritious, and much valued where it is used.

MULLET.

The mullet is a fish somewhat between the carp, and haddock, being not so dry as the former, and more succulent than the latter. Hence it is sufficiently nutritious and soluble; but it has not that exquisite relish, for which the ancient Roman mullet was prized, and which would give reason to believe it a different species. From the blood of this fish, with eggs, is made a kind of sausage, named Botargo. The best kind of it is dry and reddish. It is eaten with oil of olives and lemon juice. It is much used in the Levant and Province.

SHELL FISH.

After fish, come to be examined the insects of the crab kind, viz. the sea crab, shrimp, prawn, and lobster. In their general qualities they

they agree with fish in stimulating the system more than animal food, in not being easily soluble in decoction, and in giving out a quantity of jellied broth. Their stimulus is also with many constitutions peculiar, as they produce much anxiety and fever.

SEA CRAB.

Crabs are of two kinds, the fresh and sea water crabs; and they are used, more from the goodness of their taste, perhaps, than their nourishing qualities. At the same time they give out a considerable quantity of matter in decoction; but when submitted to analysis, they afford less volatile alkali, the proper animal product, than most other animal substances. Like many fish they are without oil, or that in very small proportion, and they are of more difficult digestion than many individuals of that class. They have also the peculiar effect of producing, in certain constitutions, cholic or efflorescence of the skin, the same as salmon and some other species of fish. To render them light they require much addition of acids and condiment.

LOBSTER.

Lobsters are caught in the channel, on the coast of Northumberland, or the Frith of Forth. They differ nothing from crabs; but in their more delicate flavor, and the peculiarity of their effects

effects in certain constitutions, rising to a still higher degree. Thus the peculiar acrimony of lobsters is known to occasion pain in the throat even in swallowing, and besides eruptions of the skin, to extend its morbid influence, to the production of pain of stomach, and general rheumatism. These effects however, it must be observed are not so common, and both they and crabs form a mild, nourishing jelly, and their soups also are highly delectable.*

SHRIMPS.

Shrimps are a species of sea crab which vary in their colour and size. They are well tasted, reckoned easier of digestion than the common crab. They are generally formed into sauces, or eat with wine.

CRAW FISH.

The craw fish may be also introduced here as being of the same species. Their delicate flavor depends in a great measure on their food, and they are either agreeable to the taste, or otherwise

* The Author feels it his duty to remark, in this place, on the practice of **BOILING ALIVE**, under circumstances of varied aggravation, the lobster, and other fish of that species, as shrimps, crabs, &c. &c. and he doubts not but many persons, from motives of just feeling, will never indulge their appetites or palates at the expence of their humanity.

from this cause. Their flesh however, is always best in summer. It is remarkable of this fish, that it discharges itself of its stomach, which during this process serves it for food, for the old stomach is the first food that the new one digests. It is during this period the stone called crab's eyes is met with. There are various methods of preparing this fish, they may be either boiled or fried, and then taken out of their shells, when they are made up into a variety of dishes. The claws and tails are the only eatable parts of the animal. The craw fish broth is a dish much prized for its nice taste, as well as its medicinal quality in soothing acrimony. It is made of four or five fish, which having their heads cut off, and entrails extracted, are to be bruised and boiled in animal soup, till they become fully red, when the liquor is to be strained, and seasoned according to the taste of the physician or epicure.

A similar soup or jelly is prepared from the fresh water crab, by adding to them a proportion of calves feet, to give the soup or rather jelly consistence, and seasoning it in the same manner as the former. A few spoonfulls of this is used to give uncommon richness, and flavor to veal or chicken broth.

OYSTERS.

This fish according to the places it is taken in differs much in size, color, and goodness of
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of taste. They are very large in the Indian ocean, but in Europe they are generally middle sized. They are reddish on the coast of Spain, and in other places black; but the best oysters are those on the English shores. Colchester and Melton are the places most esteemed for them, and when taken they are generally fed before being brought to market. They were a fish highly valued by the Romans, as well as they are at present. They are also, in common opinion, considered to possess an aphrodisiac virtue, or to incite to venery.

This fish, in its fresh or raw state, is of easy digestion, and can be taken in greater quantity in this state than any other. By all writers it is considered as a food of little perspirability, and on that account, perhaps, it is esteemed highly nourishing. It is generally long retained on the stomach, though at the same time it is not remarkable for heating, and it is a food that suits equally the robust and healthy, as well as the relaxed and invalid. It possesses a greater quantity of nutritive animal jelly in the same bulk, than any other animal food. When drest its digestion is more difficult, as it becomes deprived of its saline juice, and also of a proportion of its jelly. But no person, of common sensibility, will be guilty of the horrid practice of roasting either this fish or mussels in the shell alive. Oysters are likewise said to possess a laxative quality, which renders them a useful food to certain constitutions. They are generally

rally improved by eating them with condiment and acids. They form also a very common mixture in the sauce of other animal food of an insipid nature, both fish and fowl.

SNAIL.

The garden snail is generally placed after the oyster, as resembling it in its nourishing and gelatinous qualities. Its use, however, is little known in this country, though common in the southern parts of Europe. In this country its use has been chiefly confined to cases of disease or a hectic state and emaciation. It is a food of a tender texture, it is easily soluble, but at the same time viscid and imperspirable. It is generally used stewed in milk, and it has been recommended to strain the liquor, and drink it sweetened with the sugar to the taste. The morning is the best time for using it, and it should be long continued to have effect. A remarkable instance of the nourishing quality of this animal is cited by Dr. Cullen, of two girls, during a famine, being supported by this food alone. They have been also used raw, as an external application to open piles, with success. From these facts, therefore, if the disgust to their appearance can once be combated, they deserve a fair trial in consumptive cases, so as to ascertain the full extent of their effects.

MUSSEL AND COCKLE.

The mussel and cockle are both of a firmer texture than the oyster and snail, and therefore they form a more indigestible food, though in other respects they agree in their general qualities. The mussel, indeed, has been supposed on many occasions to shew deleterious effects, or to carry into the stomach along with them something of a poisonous nature. This point, however, has not been properly established: the effect is not common or frequent, therefore it may perhaps be more properly referred to idiosyncrasy, or peculiarity of constitution, as in other cases of fish, or to an immoderate quantity of them taken. At any rate, in using them, they should always be eat with vinegar, as correcting this supposed deleterious quality, if it actually exists.

Several other kinds of shell fish are used besides the above, the names of which it is only necessary to detail, as the Welk, Limpet, Clam, &c: the general qualities of the whole is that they are of a more tender texture than other animal food, and hence would seem of more easy solution. Yet they afford perhaps the most viscid gluten of the whole. Thus they affect the mixture of the stomach, impede its passing off, and are with difficulty expelled. It is from this circumstance of their long retention in the stomach, that they have been supposed promoters of venery.

AMPHIBIOUS TRIBE.

After fish comes to be considered the amphibious tribe.

The individuals of this tribe used in food are few in number, and consist of the tortoise, lizard and frog.

They are all supposed to have particular efficacy in cutaneous diseases, which can only arise from the supply of nutritious bland juices they convey.

TORTOISE.

The tortoise or turtle is much esteemed as an aliment. Of the turtle there are four species, the land, the sea, the river, and stagnant water turtle; but the green turtle is the one preferred, being reckoned one of the most famous delicacies of a table, and is of a peculiar nature. The belly of it is white, much resembling the flesh of young quadrupeds, particularly veal; the fat of it is of a green colour, of a remarkable odour, affecting the urine and sweat, the colour of which last is also altered. From these circumstances, peculiar qualities have been ascribed to it, but these do not seem to be well founded. From some particulars, however, in its œconomy, from its little motion. and its living mostly on vegetables or fish, it is less alkalescent than any of its kind, of a gelatinous nature, and highly nutritious

tious. Its little alkalescency is confirmed by the experiments of Mr. Geofrey, who found it produce less jelly and volatile alkali than the flesh of quadrupeds, and consequently that it is a food less stimulating to the system. Much depends, however, on the manner of dressing it. It is generally aided by animal soup, wine, and much condiment. This, no doubt, renders it lighter, and more stimulent. The green fat is reckoned the most delicate part of it, and the middle sized turtles are esteemed the best, or those not exceeding 40 or 50lb.

In this country it is seldom eat in perfection, from the length of the voyage.

LIZARD.

Of the lizards the guana of the West Indies is the only one used in food: it is two or three feet long, of a most forbidding appearance, but its flesh is delicate, wholesome, and much resembles the taste of chicken. Hence it is one of the greatest dainties of the table, and tender and highly soluble in texture.

FROG.

The clear water, or river frog, is the only species used as food, and that chiefly in France. It resembles, in its general qualities, the two last animals, though differing somewhat perhaps in the
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the proportion of its gelatinous parts, and also in its degree of alkalescency. The legs are the part of it most esteemed, and they form a delicate dish ; but from their fatty nature, they require much addition of condiment to render them light. They are much used as a nice addition to bouillions or broths.

VIPER.

The viper has been considered of a peculiar nature as an aliment, but on examination it affords no other products than those of the animals enumerated above. It must, therefore, agree with them in its leading qualities, and as such must be of a nutritious gelatinous nature, and in its properties of an intermediate kind, between quadrupeds and fish, and as it affords less volatile alkali, or peculiar salt, so it is less alkalescent than either quadrupeds or fowls. From this view, its efficacy as a medicine must be slight, and depend entirely on its alimentary virtues, though the viper's broth has been long and much esteemed.

GENERAL REMARKS ON FISH AS FOOD.

Fish more than any other species of animal food, we have seen liable to produce morbid effects. To some stomachs indeed, fish are always

ways oppressive, as particularly taken notice of, in his own case, by the celebrated Cornaro. The morbid effects which fish produce consist in complaints of the stomach and bowels, general or partial efflorescence of the skin, or affections of the nervous powers, terminating at times in death with the appearances of poisoning.

The first of these, or sickness and diarrhœa, is common with many kinds of fish, particularly fresh fish, largely used. Hence it frequently follows much use of herrings and several other species of white fish.

The second complaint, or an efflorescent appearance on the skin, is often an effect of a putrescent state of this kind of food, a tendency to it, or else a peculiar constitution or disposition of stomach with which the skin sympathizes. It is a symptom that chiefly succeeds the use of eels, salmon, herrings, and shell fish of the crab kind.

But the last morbid effect we mentioned is the most alarming, and it is generally confined to the fish of warm climates, though it is alledged to have frequently followed the use of mussels, even here. It is of importance to enquire into the cause of it, and to mark the kinds of fish which are apt to occasion this effect, with the symptoms by which their tendency to produce it is distinguished.

The cause of this deleterious quality in fish has given rise to various conjectures. Its occasional

sional occurrence has inclined many to think that different species of the same fish may exist, varying in their nature; a point which can only be established by the investigation of naturalists. By others this quality is ascribed to the food of the fish, or their vicinity to copperas banks; an opinion rendered extremely doubtful, from the fact that the existence of such banks has never been satisfactorily proved. Fish possessing this deleterious quality are found in different situations, and often at a very great distance from land, while the bad quality is confined to particular fish, and not common to all which are found in such situations. That it arises from their pernicious food is therefore a much more probable conjecture, and it is further supported by several facts---but what that food is, remains yet to be discovered. It is a well-known fact, however, that the land crab, when taken near manchineel trees, is found, particularly in dry seasons, at one time safe, at another time poisonous, from feeding on the bark or leaves of that tree instead of other nourishment. The mountain crab is likewise dangerous at particular times of the year, from a similar cause. The inhabitants are so sensible of this, that they never eat them unless they have been kept in coops a fortnight or three weeks, and purged with the physic nut leaves; a convincing proof that amphibia may acquire a noxious quality from their food, without inconvenience or danger to themselves.

This poison would seem to reside particularly in the entrails of fish, for wherever the precaution is taken of gutting and salting them, as soon as caught, these effects are avoided, and the entrails themselves will afterwards poison animals, though the fish is perfectly safe. This poison seems more active at particular periods of the year, or at least a greater number of poisonous fish are met with at one time than at another. What is remarkable, with respect to this poison, it seems peculiar to certain species of fish, and to none else.

The species of fish in which it is peculiarly active are, what are termed in the West Indies, the black billed sprat, the barracuta, the yellow billed sprat, the cavallee, the rock fish, the king fish, the smooth bottle fish, and sea lobster. The consequences attending this poison are in general very alarming, and in many instances fatal; some stomachs seem to be more susceptible of its action than others, and they almost immediately feel its effects; while the symptoms in others do not appear till two or three hours after the accident, and some escape their violence altogether.

The usual symptoms that mark fish poison, are heartburn, nausea, severe vomiting and purging, gripes, cold sweats, fainting, and, in some, giddiness; the face in the meantime becomes highly flushed, and the eyes inflamed, attended with a burning heat and spasmodic twitches,

twitches, which particularly affect the eyes, the sufferers often complaining that they are ready to start from their sockets. The burning which is felt in their face and eyes is extended to the palms of the hands, the tips of the fingers, and over the whole body, sometimes accompanied and sometimes succeeded by a milliary eruption, or by an efflorescence resembling the bite of a bug, but more extensive. The pulse, for the most part, is hard and frequent. This ardour of the skin, and a prickling in the hands and nose when immersed in cold water, are almost invariable symptoms of fish poison, and enable the practitioners to decide with confidence on the nature of the disease.

The neck of the bladder, urethra, and sphincter ani, appear to sympathize with the skin, as the patients often complain of a like ardour in these parts, with a difficulty of making water, strangury, and afflicting tenesmus.

When the violence of the disorder is somewhat abated, the cuticle begins to scale off in various parts of the body. At times a milliary efflorescence accompanies the ardour of the skin, without any evident desquamation.

The last and most tedious symptom, which may be rather considered as secondary, is an acute and shooting pain in the articulations of the knee, wrist, ancles, and sometimes in the cylindrical bones, with more or less swelling. It is distressing, at intervals, for years after every

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other trait of the disorder has disappeared, and is not unfrequently attended with dropsy.

Such is the ordinary course of the disease in its most favourable termination; but unfortunately this issue is not always so happy, for the health of some who escape its fatal effects is often so much impaired that a foundation is laid for a train of other evils, and a visit to a cold climate is at last found necessary to restore vigour to their constitutions. The consequences ought always to be dreaded, and relief ought to be given immediately, as it is impossible to foresee the event with any degree of certainty. Much, however, may be learnt from the different symptoms, although they are liable to great variations, from a greater or less degree of irritability existing in the stomach, from the quantity taken, or from a greater degree of acrimony in the poison; for why should it attack some only slightly, and prove fatal to others?

The affinity of this disorder to cholera is so great, that it requires a considerable degree of practical knowledge to discriminate them. You must be led entirely by the appearance and sensation of the skin, as they are the only and safest guides; where no certain information can be collected of the food of the patient, or of the nature of the fish, it is of the highest importance to ascertain this distinction, as a mistake might endanger the life of the patient. In cholera it is the duty of the physician to stop the progress
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of the disorder as soon as he can; whereas in fish poison a discharge of the deleterious matter is the first intention of cure, and should be promoted according to the strength of the patient. In the cure of this disorder, two purposes are clearly pointed out; viz. to procure a discharge of the poison as speedily as possible, and to remove or alleviate the effects that result from it. The first can only be effected by medicines whose operation is quick and effective, and of all those a preference should be given to the vitriolated zink, which, if timely administered, is alone sufficient to obviate the dangerous tendency of the poison. From the uncertainty, however, of its total removal, it is most prudent to succeed the emetic by a saline purge, and to continue a repetition of this so long as circumstances render such a repetition necessary. Where this plan is too violent, and the patient of a weakly habit, an anodyne must be frequently interposed before the complete removal of the disease; in order that, by an interval of ease, the system may be invigorated and the stomach enabled to proceed with the farther action of the medicine proper to remove the poison.

In alleviating the effects arising from the poison, no proper rules can be laid down, as the nature and violence of the symptoms must determine the mode of proceeding. Where the removal of the poison, by a sufficient evacuation, has taken place, and symptoms of irritation still

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continue,

continue, anodynes, both by the mouth, and glisters, as well as cordials, are indicated. The heat of the skin will be taken off by a general moisture, by the use of mild diaphoretics. The strangury will yield to a free use of mucilages, and the pains of the joints will be relieved by warmth, diaphoretics, and time. The oil of the *bignonia* is used by the negroes as a specific against this complaint, and the *cayenne pepper* has been known for a long time to possess the power of preventing or counteracting the poisonous effects of fish. Of all the fish, the poison of the yellow billed sprat is reckoned the most deadly, and most speedy in its operation.

It is of much importance, where fish forms such a principal part of diet as in these warm climates, to be able to know, by certain previous marks, whether they really possess this deleterious state. The marks commonly trusted to, are,

1st. The holding a silver spoon in water in which they are boiled, which if not tinged by the liquid, shews they are safe.

2d. The giving the entrails to a dog, or other domestic animal, and judging of its effects on them; and,

3d. The marks of discolouration on the fish, particularly the intestines, themselves, which is considered as a proof of their poisonous quality. It is observed, also, that fish without scales are most liable to this taint.

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From the whole of these observations, the fish poison seems to lie in a peculiar manner in the intestines. Though active on man, it is even more so in other animals; and its virulence is augmented by the process of putrefaction, or the longer the fish has been out of water. Hence the immediately gutting them when caught, has been known to prevent it.

DECEPTIONS PRACTISED IN THE APPEAR- ANCE OF ANIMAL FOOD, OF THE SEVE- RAL CLASSES.

We have now examined the nature of the principal animals used in diet;----before leaving the subject, it may be proper to take notice of some arts employed to conceal their defects where unfit for nourishment.

Animals are rendered unfit for nourishment, either by being over-driven, or being actually in a diseased state. Animals over-driven are thrown into a state of fever, and, from the increased circulation and heat, when killed, the blood becomes intimately mixed with every part of the solid, and thus a strong tendency to pu-
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trefaction is produced. Such food, therefore, must necessarily be unwholesome, and introduce into the habit a nourishment of a too alkalescent nature.

Animals in a diseased state it is often difficult to know. Sheep are more subject to disease than most others, particularly to the rot, from feeding in low grounds. Their flesh, when killed in this state, wants the natural flavour and sweetness, and is very apt to produce complaints in the bowels. Swine are also very subject to leprous diseases, and when eaten under disease, it has been known productive of the worst consequences, even death itself.

But though not actually under disease, an animal is often brought to market of a lean impoverished habit, which it is the practice of the seller to attempt to conceal. The most general practice of doing this is by filling the cellular membrane with air or blood. This is done by making a hole in it, and inserting a pipe to blow it up, which gives it a fulness and plumpness of appearance; and, to increase the deception, it is whitened also with flour. By this means the meat, though bad, is still further injured and spoiled from keeping, by giving it a stronger tendency to putrefaction; and its deception is very apparent when, once it is dressed---besides the indelicacy and loathsome idea such a practice conveys.

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Where blood is used for this purpose, it is still more pernicious than air, but it has the farther advantage to the seller of adding to the weight of his article.*

The same practice is also common with poultry and fish, particularly, of the latter, cod, and whittings. For this purpose the end of a quill or tobacco-pipe is introduced at the vent, and a hole pricked with a pin under the fin which is next the gill, thereby making the fish appear large to the eye, and full; which, when dressed, will be flabby, and little else than skin and bone. This is discerned by placing the finger and thumb on each side the vent, and squeezing it hard, when the wind will be perceived to go out and the skin to fall in.

With respect to poultry, the chief deception consists in breaking the bones of the breast, to make them look fuller and more plump, besides whitening the skin with flour, and also blowing them up.

* Health as well as humanity equally dictate that the easiest manner in which an animal can be put to death, its flesh will be the more wholesome.—The late improvement, therefore, of killing oxen, by wounding the spinal marrow, at once, instead of knocking them in the head, deserves the highest praise.

MILK.

Having finished the particular consideration of animal food, we come to examine next what may be termed, as it were, the connecting or intermediate aliment, or milk. No article has been so generally used as food, and by all nations of the world it is held in esteem. In many instances it has formed the sole support of life, and mankind have confined themselves to a diet of it alone, without feeling any of the disadvantages which arise from an excess of animal food on the one hand, or that inconvenience and inferior nourishment which attends an entire use of vegetable food on the other. In the northern climates it still forms a principal part of diet, and its beneficial effects are equally prized for counteracting the influence of disease, as well as for preserving a proper state of health.

Milk differs in every animal, according to a variety of causes in its nature, age, period of life, and other lesser circumstances; but, in its general nature, this fluid may be considered in every animal as the same. When first drawn it appears a homogeneous liquid, but after standing some time, it then shews a separation into parts, by the proper examination of which its nature and qualities come to be more fully detected.

tected. These parts consists of an oily, a coagulable, and a watery matter, commonly distinguished under the names of *cream*, *curd*, and *whey*.

Cream.

The cream, or oily part, is the first that spontaneously separates. It appears upon the surface of the whole, of a thicker consistence than what it is below, and apparently of an unctuous nature; and this appearance takes place merely by stagnation, without any coagulating power being applied to it. This appearance is influenced by its exposure to the air, and also to a certain degree of heat, for it sooner takes place in summer than in winter; and milk made to boil soon after it is drawn from the animal, throws up a greater quantity of it; and in a shorter time. It is also connected with the separation of the other parts; for as an acescency arises in the fluid for the separation of the curd and whey, an interruption takes place to the farther separation of the cream.

The proportion of cream in milk depends on various circumstances in the state of the animal from which it is taken; some animals of the same species are known to give a much greater proportion of it than others, and this particularly holds in the cow kind, where they are bred and reared in mountainous countries; which would shew that, besides the peculiar constitution, the external situation has also an influence; besides

this the age of the animal may also be taken to account ; and also the farther advanced from the period of delivery the milk is always richer, and contains a greater portion of oily matter or cream. Dry feeding, also, in all animals, seems to increase the quantity of this particular part.

On its first separation, however, this cream is not to be considered as entirely pure ; it contains a proportion of the other parts, or of the coagulable or watery matter, and these parts being again separated from it by agitation, or what we call churning, the oil appears in its proper form, as known under the name of butter.

Butter.

Butter, in its recent state, very much resembles in its nature the expressed and unctuous oils of vegetables, and that of animal fats ; but it is more consistent than most part of vegetable oils, from its still possessing some of the coagulable or caseous part adhering to it. Like these oils, it is also subject to that change which is termed rancidity, and this change is the effect of its admixture with the other parts of the milk, from which it is not totally freed ; for by a more complete separation of these parts the progress of rancidity is much retarded ; but the only means by which it can be entirely counteracted is by the application of sea salt with a small proportion of nitre and sugar, by which it is preserved

served very long in a condition fit to be used as an aliment.

In order to a more easy separation of the butter, or pure part, it is usual to allow the cream to remain for sometime before it is churned. By thus standing it acquires a sour taste. Butter therefore, is commonly made from sour cream. Fresh cream requires at least four times as much churning before it yields its butter as sour cream does; hence cream acquires, by being kept for sometime, new properties which facilitate its conversion into butter. But though the cream when churned is of a sour nature, what is remarkable is, that after the process of churning is finished, the milk which remains, has not near the sourness which the cream possessed, and the butter itself is perfectly sweet, so that the acid which had been evolved, completely disappears during the process of churning. This takes place equally, whether the churning is performed in the open air, or whether the air has been entirely excluded. As the cream cannot be entirely separated from the other parts of the milk even where agitation and heat are employed, so from the other parts, even the most watery, some portion of cream can still be produced; thus by churning whey itself, a pound of butter has been procured from 27 pints of it. Butter therefore, may be considered as the fat, oily, and inflammable part of the milk suspended in it, naturally

turally in the same way as in emulsions. This oily part first separates in the form of cream, and from this state it comes to be formed into a homogeneous mass, by a farther separation of all its heterogeneous parts by the operation of *percussion*.

Fresh butter when new made is almost without any smell, of a mild and agreeable taste, easily soluble in water, and remaining uniform even in a boiling heat. As its acid becomes extricated by age, or separates from its oily part; it acquires an acrimony, or rancidity, and its acquiring this state, sooner or later, will depend in its being properly freed from its heterogeneous parts, in the operation of preparing it. The proper quality of butter is marked by its oily, or fat shining surface, and its yellow color, with an agreeable flavor, and sweetish taste. The use of butter has chiefly prevailed in modern times. It was unknown to the Greeks, and the Romans used it only as an article of medicine, not of food. At present no less than 50,000 tons of it are annually consumed in London, and the best kinds of it, are from the counties of Cambridge and Essex, the Epping butter of the latter, being esteemed superior to all other from the more varied feeding, which the cows possess in that quarter. In the travels of Mr. Parke through Africa, a vegetable substance of the same kind is described by him, which is used for the purpose of butter, and is considered to possess

possess all its qualities in a superior degree; this shows strongly, the connexion between butter, and the fixed vegetable oils obtained by expression in its nature. The color of butter varies according to the feeding of the animal, and to supply its defect, adventitious means are often resorted to, by colouring it with certain vegetable substances; the highest degree of natural color which butter displays, is generally found in that from the *Guernsey* cows.

The wholesomeness of butter, as an article of food, depends entirely on its freedom from rancidity, and therefore every way by which it acquires rancidity, either by the natural state of the weather, by the operations of cookery, as in frying or burning, or by its preserved state as salt butter, it becomes in a proportional degree, heavy, and indigestible to the stomach; and introduces an acrimony into the blood. Hence the disagreeable acrid, and empyreumatic belchings, which in many stomachs arise from its use, and some stomachs are even so delicate, that they are affected by fresh butter and milk in the same way. Bread and butter therefore taken to any extent, is only fit for the most vigorous, and active powers of digestion.

Butter Milk.

Is that part of the milk which remains after the butter has come off by churning, and consequently

sequently is the serum, or whey, containing a great quantity of butterous particles. This fluid is highly esteemed in diet. It is particularly refreshing and pleasant when it is sweet and fresh. It is much recommended in hectic cases, and is often used by pouring warm new milk upon it, which reduces it to the form of curds. When it acquires something of the acid fermentation, it forms a useful drink in febrile cases, and in this state it is much used by the inhabitants, of the northern parts of the island as a principle article in the diet of children.

Cheese.

After the separation of the cream, or oily part from the milk, the remainder is spontaneously coagulated into a soft, but somewhat consistent mass, which comprehends the watery parts of the milk; and as these watery parts pass into an acid state, a coagulation takes place, or the separation between the curd and whey ensues. This natural separation of the curd from the whey, or the coagulable part from the merely watery, is seldom permitted for the purposes of aliment, and therefore before any acidity take place, when the coagulable part is particularly wanted, the separation is accomplished artificially by the addition of a coagulable matter, termed *runnet*. The runnet commonly employed is part of the stomach of a calf, a quality which the stomachs of many other animals, as well as
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some vegetable matters possess. From the curd, or coagulated part, separated by the runnet is prepared Cheese, a substance much used in diet, the qualities of which must depend on that of the milk from which it is made, and on the manner, also, in which the process of making it is conducted.

The first quality by which cheese is distinguished is its tendency to putrefaction, which shews it to possess more of the real animal nature, than the other parts of milk; and this is confirmed by every chemical experiment made upon it.

This, therefore, being its leading quality, its other distinctions we shall next consider.

The first difference in cheese arises from the condition of the milk of which it is made. Thus cheese may be made of new milk, or as it comes from the cow; it may be made of milk deprived of its cream; it may be made of cream itself; it may be made of a mixture of milk and cream, or it may be made of a mixture of milk of different animals. The second difference in the making of cheese arises from the manner of conducting the process. Thus the cheese is also the better the more it contains of the cream, or oily part, and hence the goodness of it depends much on the manner of separating the whey from the curd to preserve this. If the milk be much heated, the coagulation broken in pieces, and the whey forcibly separated, as
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is the practice in many parts in Scotland the cheese is scarcely good for any thing. The whey is delicious and rich at its expence, especially the last squeezed out part, and butter may be even obtained from it in considerable quantity. If the milk again be not too much heated, if the coagulum be allowed to remain unbroken, and this whey be separated by very slow and gentle pressure, the cheese becomes excellent, and the whey almost transparent and colourless.

The next difference is in the manner of salting and drying, and also in the after preservation of the cheese. All these circumstances form a particular department in the management of the dairy, which is understood in some parts of the country better than in others. The proper knowledge of it is only gained by experience, and gives a superiority to the production of certain places above others; hence cheeses are commonly distinguished by the different districts of the country in which they are made, and in many of which, from their mode of treatment, they are of a peculiar kind.

Whey.

The cream and coagulable part of the milk being thus removed, the simple watery part, or whey, only remains; this part consists in a considerable degree of pure elementary water, whether its separation from the other parts is produced spontaneously or artificially, and in such
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a quantity is this watery, or elementary part, as to be at least 7-8ths of the whole of the milk. Hence there is less difference in the proportion of whey, than in the proportion of the other parts in the milk of different animals, for the same proportion of residuum is found on evaporation, both in cows and in woman's milk. Whey is more or less pure, according to the state of the milk, from which it has been separated; but in all cases it holds dissolved in it a certain portion of the other parts, varying in their kind and proportion, according to the particular state of the milk at the exact time of the separation. Thus whey produced from new milk by coagulation with runnet, has diffused in it a considerable portion of curd, but little of the cream. Whey, spontaneously separating, possesses an acid taste, and is then entirely deprived both of the oily and caseous parts. To obtain whey in a pure state, it should be first filterated, so as to separate all the curd, and being then boiled for sometime, a thick white scum will collect on the surface termed *float whey*, which consists of the curdy part. This being carefully separated, and the whey allowed to remain at rest for some hours, so that a precipitation of any remains of curd may take place, the remainder will decant off as colorless as water, and in a pure state.

From the circumstance of whey becoming sour it contains a saccharine matter convertible into
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a peculiar acid, named the *lactic acid*, and to this property the acidity which milk contracts is to be ascribed, for neither curd nor cream acquire this property of themselves, without the whey or watery part. In consequence of this acidity, milk becomes capable of undergoing the vinous fermentation, and it is the only animal substance that is endowed with this property. This singular fact seems to have been first discovered by the Tartars, who obtain all their spirituous liquors from mare's milk, and till this acidity is produced in milk, it is found incapable of being converted into wine.

These several parts of milk we have thus described, are found to be contained in very different proportions in the milk of different animals.

Thus the proportion of cream is greatest in the milk of ewes, next in the milk of cows, and less in that of goats, while woman's milk seems to contain more of it than that of mares or asses, though this also is regulated somewhat by the kind of diet, being less abundant under the use of vegetable food. The proportion of it again on an average is greater in the ewes, goats and cows, or what we may term the ruminant animals; while it is less in mares, women, and asses, or in the nonruminant.

The quantity of whey is exactly in the inverse proportion to that of the curd; mares, women and asses affording more of it than either ewes, goats, or cows.

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Though these proportions in general prevail, yet some difference will occasionally occur in the proportions of particular individuals of the same class, and that arising from a variety of circumstances depending on peculiarity of constitution, difference of age, distance from delivery, and variety of diet; making proper allowance for these circumstances, the result already stated, will pretty uniformly hold.

Woman's Milk.

Woman's milk may be considered indeed as in some degree peculiar, its colour is whiter, and its cream more abundant than in cow's milk. After the cream is separated, the milk is exceedingly thin, and has the appearance rather of whey with a bluish white colour, than of creamed milk. None of the methods by which cow's milk is coagulated, succeed in producing the coagulation of woman's milk. It is certain, however, that it contains curd, for by boiling pellicles form on its surface, which have all the properties of curd. Its not coagulating, therefore, must be attributed to the dilution of its curd by the great quantity of water, though the cream also be churned ever so long no butter can be obtained from it, but if after being agitated for some hours, it is allowed to remain at rest for a day or two, a separation of it takes place into two parts, a colourless pellucid fluid, like water, which occupies the inferior part of
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the vessel, and a thick, white, unctuous fluid, which swims on the surface. The lowermost fluid contains sugar of milk, and some curd, the uppermost differs only from cream in consistence. The oily part of the cream cannot be separated by agitation from the curd. This cream contains a greater portion of curd, than the cream of cow's milk, and when after the separation of the curd, this milk is slowly evaporated, it yields a sugar in considerable quantity. Thus woman's milk differs from cows in three leading particulars, in containing a much smaller quantity of curd, in its oil being so intimately blended with this curd, that it does not yield butter, and in its containing a greater quantity of sugar.

Ass's Milk.

Ass's milk has a very strong resemblance to human milk, it has nearly the same color, smell and consistence. When left at rest for a sufficient time a cream forms upon its surface, but by no means in such abundance as in woman's milk. This cream by very long agitation yields a butter which is always soft, white, and tasteless and is singularly very readily mixes again with the butter milk; but it may be again separated by agitation, while the vessel that contains it is plunged in cold water. Creamed ass's milk is thin and has an agreeable sweetish taste. Ass's leading

milk therefore differs from cows milk, in three leading particulars; in its cream being less abundant, and more insipid; in its containing less curd; and in its possessing a greater proportion of sugar.

Goat's Milk.

Much resembles cow's, except in its greater consistence, like that milk it throws up abundance of cream from which butter is easily obtained. The creamed milk coagulates as cow's milk, but yields a greater quantity of curd, its whey contains also sugar.

Ewe's Milk.

Resembles almost precisely that of the cow, its cream however is more abundant, and yields a butter not so consistent as cow milk butter. Its curd has a fat and viscid appearance, and is with difficulty made to assume the same consistency as the curd of cow's milk. It makes, however, excellent cheese.

Mare's Milk.

Is thinner than that of the cow, but scarcely so thin as human milk. Its cream cannot be converted into butter by agitation. The creamed milk coagulates precisely as cow's milk, but the curd is not so abundant. The whey contains sugar.

Secreting

Secretion of Milk.

After this view of the qualities of the various kinds of milk, we shall next examine its mode of production. Milk is clearly an animal secretion from the chyle, and it would seem chiefly furnished by that part of the alimentary matter last taken in. This seems confirmed by the fact, that the quantity of milk secreted, is always considerably, and immediately increased on the taking in of aliment, and where aliment is withheld, the secretion of milk is evidently diminished. But the effect more immediately follows the reception of liquid aliment, rather than solid, and the enabling of a nurse to afford a large quantity of milk, depends very much on the quantity of liquid she is able to take in. The necessity for this is even pointed out by nature, for on the application of a child to the breast, the mother is often immediately affected by a considerable degree of thirst. The nature of the milk, however, or the production formed from the supply of liquid, is much influenced by the various diet of the animal; and according to the feeding, it has been found to assume either an acescent, or alkalent nature; a difference which deserves much attention in selecting it for the human subject.

Alimentary Uses of Milk.

After these introductory observations, we proceed to examine the use of milk as an aliment.

Aliment for Infancy.

Milk seems the aliment intended by nature for the nourishment at birth, and it is particularly fitted for the purpose by giving an intermediate nourishment between vegetable and animal food. Before birth, the food of the child is derived from the parent, and is already in a perfect, or animalized state. After birth, therefore, a supply of either vegetable, or animal matter to the child would be improper, as neither suited to its powers of digestion, nor to the state of its system. An intermediate food introduces the necessary changes by degrees, and allows vegetable food to become, in a certain period of time, the principal nourishment of the child. Hence milk, and by degrees a proportion of vegetable matter, is the food best adapted to it, and the milk of its mother in preference to every other. The length of time for which this food should be continued, must be regulated by circumstances. Nine months seem the proper medium for nursing, and if cut short, or protracted beyond this time it is equally attended with inconveniences, though the protracting
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it somewhat longer, is certainly the safest course. But though milk is thus the proper aliment, the interposition of vegetable matter, we mentioned as also necessary. The period when this should be begun, must no doubt be regulated by circumstances, but it can never be introduced with safety till some months after birth. Five months have been mentioned as the proper period of its commencement, and from that time it should be gradually increased to the period of weaning.

But in many instances this first nourishment afforded by nature, or milk, even though tendered by the mother, does not agree with the child, but subjects it, from acidity, to disorder. The cause of this in the mother is often uncertain, but it is at times not derived from her, but seems to lie more in the mixture of vegetable food with it, or in a weak or diseased state of the digestive organs. It is of consequence, therefore, since the milk is thus found to disagree, that it should at least be procured to the child in its most perfect state; and the best method of doing this, is to regulate the diet of the nurse, which we have seen to influence so much the nature of this secretion. From a comparison of the diet of other animals that afford milk, vegetable aliment seems most fitted for women, during the period of nursing. By this aliment a greater quantity of milk will be produced, and its quality

ity of a more proper kind than that where much animal food prevails. This is confirmed by the fullest experience of all physicians, and the change of diet in nurses from a vegetable, to an animal one, has been attended with the worst effects, and even shown in itself by the indulgence of a single meal.

At any rate, whatever the previous habits of the person may have been who is a nurse, an excess of vegetable matter will be found highly serviceable, and animal food should be taken from her, without, perhaps, breaking in too much upon her former mode of life. In all cases of hired nurses, it should be made as much as possible a rule, and only departed from, when symptoms of indisposition apparently arise from this cause. Neither should a nurse fast long, for then the milk will become alkalescent, and the child receives the breast with disgust.

Aliment for Manhood.

Having thus established the propriety of milk as an aliment for the child, it is now proper to consider how far it is fitted for the nourishment of a more advanced period of life, or forms a proper regimen under certain circumstances of disease. From the nature of milk, it is clear that every part of it contains much nourishment, and if joined by vegetable matter, there is no doubt it

will form an aliment sufficiently invigorating for every purpose till after the age of puberty. Previous to this period it is hardly ever necessary to rear children in any other way, and such children will be found to enjoy more perfect health and strength than where a proportion of animal food is interposed; for the early use of animal food will be found attended with the worst consequences, in giving an irritability and inflammatory disposition to the system, and goading it on as it were to maturity before the time. After the age of puberty, and when an active life has begun, a proportion of animal food in a cold climate becomes necessary. This proportion should be continued till the powers of life begin to decline, when a return to the aliment of the early days should be again resorted to, in order to correct the alkalescent state of the fluids which the progress of life naturally brings on. Thus milk may be indulged in at all times of life, unless when certain circumstances in the state of the stomach arise to prevent it, and these circumstances depend on its coagulation or excess of acidity; with respect to the first, the cause of it is hard to explain; in regard to the second, it is corrected by using it previously boiled, or joining it with absorbents, or occasionally also with aromatics.

Aliment for Disease.

As milk is more readily formed into chyle than any other aliment, where the digestive organs are weak, it affords a matter giving a quick supply of nourishment to the system. Hence it forms a restorative in the way of medicine in all cases of emaciation and debility, provided the digestive organs are in a state capable of receiving it. It is particularly fitted also to correct a vitiated state of the fluids where this state is not connected with any peculiar or specific acrimony; but even there it will be found useful in checking the violence of symptoms, though it is observed at the same time that in certain cases, even this does not hold where the acrimony is not confined to the fluids alone but is connected with a general faulty state of the system. But there are particular diseases to which milk has been considered as peculiarly appropriated, and the chief of these is consumption of the lungs. From whatever cause this disease proceeds, along with a general debility of the system, there prevails a specific morbid irritation in the seat of the malady. Milk therefore affords an aliment sufficiently nourishing to counteract the debility, being of a nature the least disposed to irritation of most kinds of food; and there are instances of its both curing and greatly moderating the violence of the symptoms.

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toms. The milk most fitted for this purpose seems to be that of the animals that do not ruminate, ass's and mare's milk, therefore, has been preferred, and, where it can be had, that of women. Even in certain cases the watery part of the milk or whey has been reckoned most useful in this disease, and the whey most highly recommended has been that of the goat, from its varied manner of feeding.

The weakness of the general habit in consumption, and particularly of the digestive organs, is a strong objection to the use of much vegetable aliment. An intermixture of diet is never proper, where one kind seems particularly appropriated to obviate the symptoms of any morbid state.

Nor is the goat considered as less benefited by a milk diet than consumption. Whatever doubts may have arisen with practitioners upon this subject, it is perfectly clear that those who have lived very much upon milk or vegetable diet are by no means the common victims of it. Animal food therefore, if not the cause seems highly to aggravate this disease, and a change of regimen, or low living, has in many instances been known to cure it. But in order that milk may be effectual here, it must be begun at an early period, before the constitution has suffered from the attacks of the malady, and while yet a firmness and vigour of habit remains. If a milk diet be resorted to, after the constitution has suffered, and the health in general is broken down, instead of being service-
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able by its increasing the general debility and atonic state, it will occasion the paroxysms, instead of confining their violence to the extremities, to attack organs of greater consequence, and thus it will hurry on a fatal termination of the malady. Neither should this diet be ever resorted to as a temporary expedient against a constitutional disease; but if it is begun, it should be persisted in, and no return made to that mode of life which seems to have given origin to, or increased the violence of the malady.

Fevers also are a species of disease in which it is recommended. In the active state, however, of fevers, digestion seems for the most part, suspended, and the use of milk, therefore, in its common form, cannot fail to prove rather hurtful, nor will it serve to quench the thirst which is constantly present. Where it is employed, therefore, it is more proper in the form of whey, and with a degree of acidity, than otherwise.

Choice of milk suited to particular circumstances.

From the variety formerly observed in the different kinds of milk in all cases of disease a choice should be made, according to the particular purposes intended by its use; thus, where much nourishment is wanted, and the digestive organs possess sufficient powers for receiving it, while at the same time there is no hazard of fullness of habit being induced by it, the milk of the ruminating animals is always to be preferred.

preferred. When in opposition to this, an inflammatory disposition of body is present, and the organs of digestion are at the same time in a weak and relaxed state, the milk of the non-ruminant animals affords a much safer and a more appropriate nourishment.

Milk intire.

Milk in its recent state is certainly the most proper form in which it can be used, as it's parts are then most intimately blended, and it is most proper for the weakly and young stomachs. Many nations have a custom of boiling it immediately after being drawn from the cow, and before it is used, by this method no alteration in the qualities of the milk takes place, and it is deprived of a considerable quantity of air which lessens its tendency to acescency and fermentation. Hence its coagulation in the stomach is not so easy, but in this state it is apt to produce costiveness, and to give a greater proportion of fœces. It requires therefore a more robust and vigorous stomach than when fresh.

Different parts of Milk as aliment.

After this perfect or entire form of milk, we shall consider the nourishment it affords when separated into different parts.

Cream.

Cream, and its product butter, are intirely nutritious, but with most stomachs both will be
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found of difficult mixture and digestion in any considerable proportion. At the same time cream will be more easily digested than butter, from its containing a proportion of caseous and watery parts. Some stomachs also are incapable of digesting oils, and therefore with them butter will sit heavy, while cream will produce no bad effects. In other stomachs again, where a disposition to acidity prevails, butter will be attended with less inconvenience than cream, from the mixture of parts in the latter disposing to fermentation. Butter should in all cases be freed as much as possible from the milk, after churning, which will render it less liable to be soon tainted with a rancid bitter taste. We have formerly mentioned the vegetable butter of Africa: it is prepared from a tree named *Shea*, the kernel of which is first dried, and afterwards boiled in water, to extract the pulp. This pulp is the butter, which is said to keep a whole year without salt, and to be whiter, firmer, and of a richer flavor than the best cow butter. The preparation of it forms a considerable branch of trade in Africa, and it is only to be regretted that this production has not been introduced into our West India colonies. From this account the shea would seem a more digestible substance than our butter.

Curd

Contains the chief nourishing part of milk, and, in any state in which it is taken it affords a rich
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aliment, though more so when produced by artificial coagulation, and the milk is in a fresh state, than when it is the consequence of its natural separation, for then indeed it is more soluble but of an acescent quality. Many nations live on curd formed in both ways. Thus some provinces in France are intirely fed on curds as their solid food, and use whey for their drink. By the Laplanders, we are told it is much employed in this form to correct the alkalesency of their food, and to stand them in place of an acescent condiment, which their climate denies them. When used in its united form, without the abstraction of the whey, or in its recently coagulated state, milk is equally digestible and nourishing as when fresh drawn. For when the whey is separated, though the curd is then more nutritious, yet it is also more difficult of digestion, and this in proportion to the degree in which the separation is made, or in which the whey is taken from it.

Cheese.

But the chief state in which the curd is used is in the dried form, or in that of cheese, the quality of which varies according to the circumstances formerly noticed in the state of the milk from which it is made; according to the kind of milk from which it is prepared; according to the quantity of oil and whey which the coagulable matter retains, regulated by the mode of separation

tion and pressure; and lastly, according to its age. In all these cases, the extent of its nourishing quality will depend on the quantity of oily and glutinous parts it contains, and when recent and fresh, no substance can afford a more invigorating aliment, though it is somewhat difficult to render it soluble by the stomach.

But cheese when not fresh acquires new qualities, being liable to rancidity and corruption, and according to the degree of this corruption, it becomes more acrid and stimulant, partly from the acrimony this process induces, and partly from the insects it generates in that state. In this state of corruption we are to consider it as losing its nutritive quality, and it becomes then only fit as a condiment for vegetable food. Cheese, therefore, of a middling age, and where none of its parts seem to predominate, may be considered as the most wholesome, for it contains all its nourishment with an incipient degree of fermentation, which renders it more soluble and easier digested by the stomach. Cheese though most commonly used in a raw state, is by many preferred toasted, that is, heated over the fire to a considerable degree, by which a portion of its oil is separated, while the other parts retain a firmer and closer connection. Though many stomachs digest this food, yet it is clear its insolubility must be much increased by this operation, and is highly improper for those who are troubled with stomach complaints, or who are

liable to feverish heats at night, at which time it is most apt to be taken. In the making of cheese a quantity of sea salt is always introduced into it in order to render it fit for keeping. Some other additions are made in different countries, and in different districts of the same country, with a view to improve its colour or increase its relish. These additions are marigolds, sage, wild melilot, &c.

The countries most celebrated for cheese, are *England, Holland, Switzerland, and Italy*. The best English cheeses are the *Cheshire, Gloucester, and Stilton*. The Italian cheese in most esteem is the *Parmasan*; of the Swiss cheese, the *Green-cheese* of Switzerland, which owes its colour to the melilot, is much sought after. This cheese is brought to table in a powdered state, and is generally mixed with butter before it is eaten. The *Grueyeres* cheese is also equally prized. The *Dutch* cheese, by being too much salted, acquires, when old, a pernicious acrimony. On the whole, cheese is an aliment only fit for the laborious and active, and for those who have strong powers of digestion; hence it is chiefly confined as food to the lower ranks of society, and is only used in higher life as a condiment, to give a stimulus to the stomach along with other food, and in that way alone it can be said to assist digestion.

With many people cheese forms a particular cause of aversion, so that it can neither be seen by
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them, tasted, nor smelt. This is owing to a certain constitutional peculiarity which cannot be explained, and this is the more remarkable in regard to cheese, as there is nothing strikingly disgusting either in its appearance, flavor, or taste.

Corstorphine Cream.

Besides cheese, another form in which the curd is used in one part of Scotland, is in what is termed Corstorphine cream. This is made by filling a vessel with skimmed milk, which has a hole in its bottom stopped with a peg; this vessel is placed within another filled with boiling water; and when this is done, it is allowed to remain in this situation for a day or two, according to the state of the weather; at the end of this period a coagulation of the milk has taken place, and the watery part of it subsided to the bottom. This watery part is then drawn off by opening the peg at the bottom of the vessel, and being again stopped up, the same operation is continued for 24 hours longer, when an additional water is again drawn off, and the consistence of the curd is thus rendered pretty thick; it is then agitated briskly with a wooden stick, and made fit for use. This form of curd is much used in the neighbourhood of Edinburgh; it forms an aliment tolerably nourishing, and in summer, from its proportion of acidity, is gratefully acid and cooling.

Whey.

Whey.

The whey, or watery part of the milk, is a form very much used, and that as *simple whey* or *buttermilk*.

Simple Whey.

As whey it is preferred when separated by runnet, in which case it holds a proportion of cream and curd suspended in it, besides its quantity of sugar. It is therefore a fluid sufficiently nutritious, though not so much so as the milk intire. It is clearly more acescent than milk, being capable of the vinous fermentation; and hence its acescency may go too far, and produce laxity and flatulence. Different milks yield wheys that have different qualities; cow's milk allows its oil to be separated in the greatest proportion in the whey; sheeps milk less, and goat's milk allows no separation at all. The whey in some degree, follows the nature of the milk; goat whey is a medicine of great use in many cases, and its advantages are improved by the necessary residence in mountainous situations to obtain it. Thus by the form of whey, there is introduced into the habit a bland, easily assimilated nourishment, passing off readily by the secretions, and soon changing the state of the fluids. Were it not indeed for the state of the stomach, and the permanent stimulus it requires, liquid food would be often employed with the greatest advantage. In many cases,

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increase of fluidity gives increase of nourishment; thus to a calf, more effectual nourishment is afforded by diluting its milk with an equal quantity of water, than if the milk were given alone. Besides whey is particularly distinguished by its proportion of sugar, or what has been termed its essential salt. The nourishing quality of sugar in every form is well known and established; but from this circumstance the disposition of whey to acidity is produced, which though useful in certain cases of disease, and where an inflammatory habit is conspicuous, may yet render it an aliment unfit for those whose stomachs are disposed to acidity, which it will increase to a morbid degree, and thus occasion symptoms of irritation in the bowels and laxity to ensue. Hence whey produced by spontaneous coagulation, being generally sour, possesses little nourishment, and is only fit to be given in certain cases of fever or inflammatory disease.

Buttermilk.

The second form of whey, or buttermilk, is a species of aliment very much used in certain districts of this country; when used fresh, it is merely milk deprived of the cream and such parts of the cream and curd as are left in it, are so broken down and resolved as to be easy of digestion. It is therefore considerably nutritious and cooling; and this last quality of it is increased as it acquires acidity by keeping. What also peculiarly

liarly distinguishes this acidity is, that it does not increase that state of the stomach where such a disposition is present, in the same manner that vegetable matter would do.

Vinous Milk.

Of the productions of milk, before finishing the subject, we cannot omit mentioning the *koumiss*, a vinous liquor, and the favourite beverage of the Tartars, procured from the fermentation of mare's milk. The same liquor it is now known, may be obtained from the milk of other animals. Its medicinal uses are much the same as experienced from milk itself, for it acts chiefly as a restorative and strengthener; as yet, however, we have but few facts to determine upon the extent of its qualities. Besides the Tartars, the Persians and other inhabitants of the East prepare a kind of wine from milk, which possesses all the properties of an intoxicating liquor; but, whether in the making of it, any addition of the saccharine principle, by the mixture of other substances, is made to the whey, is a point not hitherto ascertained.

Condiments of Milk.

From the nature of milk, thus explained, all condiments of milk, as liable to aciesency, are of a cooling nature. Where this tendency of them is injurious, their preparation should be accompanied with some of the aromatics. Cream and whey, thus prepared, are often used with advantage.

tage. Sugar is also another useful combination with milk, for though increasing acenesey, it prevents the spontaneous separation of milk, and therefore gives it the same advantage as if newly drawn; hence it is proper to give sugar along with milk to convalescents. Conserve of roses is often used, and acts only by its sugar, two thirds of it being such; and honey itself is often employed with advantage.

Particular choice of Cow's and Asse's Milk.

To conclude the subject of milk, as it forms an aliment so highly beneficial in childhood, and in all cases of weakness and emaciation, where the stomach will permit, it is of much consequence that it should be procured in its most perfect state; and the animals from which it is procured should be healthy and well nourished. At all times it will be found best in spring and summer, from this circumstance of the salubrity of the nourishment the animals then receive, and on the same account it should be taken from an animal which enjoys an exercise suited to its natural manner of life. Cow's milk, when good, ought to be white without any smell, and so unctous that a drop falling on the nail, will not run down in divisions. It should be taken from an animal of three or four years old, and will be best three months after calving. Where liable to acidity, it may be mixed with lime water, or some of the distilled aromatic waters. Where used as a medicine, it may

be diluted with Pyrmont, Seltzer, or some other proper mineral water. Where it is liable to induce costiveness, it may be mixed with brown sugar, or with magnesia, or it may be boiled with oatmeal or veal broth. In cases where ass's milk is preferred to the cow, the best seasons for drinking it are spring and summer, as at those times there is the greatest variety of green food for the animal, for when it is foddered with hay and dry nourishment, the milk is neither so light nor wholesome. Ass's milk is generally taken early in the morning upon an empty stomach in the quantity of half a pint at a time, but where much is expected from it, the more proper plan is to give it in smaller doses two or three times in the day; on many occasions, Seltzer and Pyrmontwaters may be advantageously mixed with it.

VEGETABLE FOOD.

Vegetable food is more ancient than any other. As forming the food of animals it is the foundation we observed of all our nourishment, for by it those animals are nourished, which in turn afford sustenance to man. Indeed there are no circumstances under which a diet of animal food should be solely employed. This has been confirmed by every experiment made, and the confinement of a person only for a few days to this mode of living, has induced such symptoms of putrefaction, as to oblige him to desist. Besides this, by stimulating to an extreme degree, the springs of life are urged on by animal diet too fast, and preternatural, and of course weakening exertions of the system ensue, which induce, from their excess, an early decay. Thus childhood is prematurely ushered by it into manhood, and the powers of manhood soon exhausted, display the infirmities and progress of age, at a period when vigour and strength should still be in perfection. A diet of vegetable food is, on the contrary, conducive to long life. It neither accelerates the vital energy, nor ripens the fruit before its time, but with a slow and regular step it brings forward the progress of the different stages in their due season, and with all the advantages

vantages which their proper maturity ought to confer on them. At the same time, while we thus point out the good effects of a vegetable diet, in arresting as it were the progress of life, and giving a greater permanence to existence, we by no means approve of it as a diet to be entirely trusted to.

Declaimers on an exclusive use of vegetable diet, have not taken into review the various and new circumstances of situation in which man is now placed. He is no longer the child of nature, nor the passive inhabitant of one genial spot as when he was first formed. He is now a citizen of the world at large, exertion and toil are his constant attendants, and he requires a more ready and assimilated nourishment than vegetable food can convey. In many situations also, the vigour of his system is weakened by extremes of temperature, which demand, to counteract them, the most stimulant, and invigorating food he is capable of acquiring. The excellence of vegetable food used alone, is confined therefore to a mild temperature, and a passive state; and there it certainly deserves that preferance which humanity on the one hand, and philosophy on the other, have bestowed upon it. Viewing then vegetable food as conveying an insufficient nourishment for our present civilized situation; we shall next state the inconveniences that are found to attend an excess of its use. The first inconvenience of vegetable food formerly taken notice of, is its constant tendency
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to acescency; but this is only hurtful when it takes place to a morbid degree. Indeed this tendency to acescency, would seem at all times peculiar to the stomach, for even food in the stomach of the most carnivorous animals, suffers a decomposition, and becomes acid. Hence this acidity is frequently felt sometime after taking animal soups, but the generation of an acid from animal food would only seem to take place in the first instance, for we know that in a few days strong symptoms of putrescency may be produced by it when taken alone. If this, therefore, is the case, that a natural tendency to acescency prevails in the stomach, as a progress to assimilation, it cannot fail to be noxiously increased by the sole use of vegetables; and the counteracting this state, or checking all tendency to fermentation, must be the great secret in the regulation of vegetable diet. This secret, no doubt, depends on the preventing, by our choice of them, excess in the proportion of fermentable or saccharine matter, and in exciting the action of the stomach, so that they may not be too long retained upon it.

The next inconvenience alledged against vegetable diet, is its difficulty of assimilation; that vegetable aliment is more difficultly reduced to nourishment, seems generally admitted, and in the end it produces a greater quantity of fæces. When received into the stomach it is likewise specifically lighter than the gastric fluids. Hence it floats near the top of the stomach and causes irritation.

irritations. This uneasiness is not felt for some time after its reception, but afterwards it begins to operate on the upper orifice of the stomach. The difficulty, however, of assimilation that attends vegetable food, may be got the better of by a proper selection of it, and it will also be chiefly felt in weak stomachs, and will by no means affect the vigorous and robust.

A third inconvenience of vegetable food is its extrication of a considerable quantity of air, by which the stomach becomes distended, often to an enormous degree, and much uneasiness is produced in the adjacent organs. This extrication of fixed air is common to all vegetables; it varies, however, extremely in different kinds of them; and it is from this circumstance that the flatulence and torpor is experienced which succeeds a full meal of them. Hence all vegetables that contain much of it should undergo a previous preparation before being used as food.

These, then, are the chief inconveniencies that attend a vegetable regimen; while, on the contrary, to counterbalance them, this species of diet is always found to promote or sharpen the appetite, and to keep the stomach in an active state. Neither are any constitutional disorders the consequence of it, as happens from animal food; for whatever morbid symptoms arise under its use are confined almost entirely to the stomach and bowels, and seldom carry any hurtful effects to the system at large. Nei-

ther do any evils arise from occasional excesses in its use; and the mischiefs of repletion or over-fulness are avoided by it, unless in cases of extreme indolence, or where a continued course of immoderation is pursued in the quantity of it taken. By its moderate stimulus it counteracts the disposition to an inflammatory state, and proves, therefore, in many cases, highly serviceable in checking the violence and arresting the progress of many constitutional diseases. To the stomach it is of great importance, independent of its nature, by giving that bulk or proper distention which, in order to its action, this organ requires; for in order to give strength and vigour to the system, it must be filled, or a certain degree of distention of it must always take place.

When we compare the history of vegetable diet in ancient and modern times, the superiority of the latter appears very great. The vegetables of the ancients were few in number, and those not always of the most delicate or nutritious kinds. Instead of the acorns or nuts, the farinaceous seeds and roots have been introduced, augmented in number, and their qualities have been improved. Even of the kinds retained, domestic culture has altered their nature, and the ancients were entire strangers to producing that variety of species which now belong to every genus of vegetables in use.

The extent of vegetable food the wisdom of nature has provided, should be much greater than

than that of animal food, as forming the foundation of nourishment for all the animated creation. Hence we find no vegetable but what affords nourishment to some animal; and there are many vegetables, which, though naturally of a deleterious kind, can, by proper preparation, be converted into nourishment to man. But man, more than any other animal, is distinguished by the choice or selection of food he makes; and in making it, as we formerly observed, he is generally determined by his taste; such also is the wisdom of nature, that she has established a certain sympathy between the stomach and the palate; thus what is disagreeable to the one, is not very digestible by the other. To this there are no doubt some exceptions; but as a general maxim it will be found to hold. Certain reluctances we know are occasionally overcome, and what is termed an acquired taste is established; but this by no means infringes on the general intention of nature. Even the same circumstance or peculiarity that establishes an acquired taste, shews the same deviation in regard to the digestibility of foods; for certain kinds of food, to all appearance indigestible, are easily soluble in some stomachs, and these often very weak ones. Hence inclination is to be particularly studied in every case of stomachic weakness.

Among the other properties of vegetable food, it has been especially considered by all authors

as having most influence on the powers of the mind, and in preserving a delicacy of feeling, a liveliness of imagination, and an acuteness of judgment; but in proportion to these superior qualities, it must be observed, the state of body is equally the attendant of timidity, fluctuation, and doubt. Animal food, in the other extreme, gives a strong vigour and firmness of purpose fitted for the most active exertions of life. By a mixture of diet these two extremes come to be counteracted, the body possesses a proper share of vigour; and, correspondent to it, the mind displays a firmness and capacity suited to every valuable purpose. The diet, then, producing this state may be properly called temperance, without limiting the individual to an exact portion of either kind of food, or tying him up by the absurd and sickly system of Cornaro; and this state will be properly regulated by the experience and feelings of every individual, both in regard to the quantity and quality of his nourishment.

In the use of vegetable food, as well as animal, attention must be paid both to the proportion of it taken, and also to the state in which it is used. The first of these must be regulated by the three circumstances of season, way of life, and climate. With respect to the first---in summer the quantity of vegetable food should be always increased, whatever our habits may be; and the propriety of this is evidently pointed out by nature, from its abundance at this period.

This increase of vegetable food is also the more necessary if the appetite is naturally keen and healthy, as a more strongly nourishing aliment would at this time expose to all the effects of putrescency, which the increase of the vegetable diet will, on the contrary, counteract.

The way of life must also regulate a good deal the proportion of vegetable nourishment. An essential circumstance in the use of all diet we formerly remarked to be the distention of the stomach and bowels, so as to enable them to act with effect upon their contents. In the sedentary and inactive, to produce this distention by food of a less nourishing kind is particularly to be studied; and that no more nourishment may be thrown in than what the wants of the system require. Hence a preference to the use of vegetable food is strongly pointed out, while in the case of the active and laborious the reverse of this plan should take place.

That the climate also should much regulate the proportion of vegetable food, is a fact sufficiently established; that the mortality in warm climates is particularly aggravated by much use of animal food, is incontestibly confirmed; and that a diet of a vegetable and acescent nature, with a large proportion of condiment, such as we find used by the inhabitants of these countries, is the diet best suited to the preservation of health; for by this excess of condiment the morbid effects on the stomach and bowels.

bowels, natural to vegetable food, are counteracted, and the chyle formed from them passes into the circulation in a proper state for supporting the body in such a situation. On the other hand, in a colder region, a permanence of nourishment is required, which animal food particularly conveys; and as this nourishment is less apt to disorder the stomach or bowels, no great portion of condiment is necessary, either as a stimulus to the organ, or in order to avoid any hurtful consequences that may arise. The proportion, therefore, of vegetable food is clearly pointed out to be small, and chiefly of the farinaceous or least acescent kind.

The state in which vegetable food is used is of equal importance with the proportion of it taken. Thus vegetable food requires to be particularly used in a fresh state; for, by being kept, many kinds of vegetables lose their peculiar flavor, their taste and smell, and in consequence of this becomes more indigestible and flatulent, and lie heavy on the stomach; this is particularly the case with the pulses, with herbs, and with fruits.

Having offered these general observations on vegetable food, we shall now enter into a more particular examination of it, as divided into four different kinds, each varying in the proportion of their nutritive principles, viz. farinaceous seeds, roots, herbs, and fruits.

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Farinaceous seeds comprehend three divisions, viz. grains, pulses, and oily nuts.

GRAINS.

Grains, the first division, are distinguished by their great proportion of the glutinous or animal principle along with their other parts, by their large portion also of saccharine matter, and by their less disposition to acescency than any other vegetables; neither is their solubility in the stomach so great, by which their powers of nourishment are increased.

Bread.

Hence in all ages, and among all nations, the farinaceous grains have formed, in preference to other vegetables, the basis of food; and the only difference between the savage and civilized state, is, that in the latter, art has been employed to separate the purely nutritious part, and next to lessen its viscosity, and render it more digestible, by the process of fermentation; the perfection, then, of making bread, consists in the quality of the flour, in the proper attenuation or disengagement of its parts by baking, and in the proper application of heat; while the test of its quality should be to be light and spongy, and of an agreeable taste, and readily miscible with water.

So necessary is bread to the support of life, that we eat almost nothing without it; and no nations seem to be without something in place of it. Hence it has been justly stiled the staff of life. The first bread seems to have been of acorns, chesnuts, and dates. For the same purpose the Americans use the cassada, and the Moluccans the pith of trees. In Lapland their bread is formed of dried fish, and the inner rind of the pine. This shews the necessity for something dry in the way of food, and which may continue a permanent action on the stomach when introduced into it; and hence fluids, however nourishing, are never satisfying to the appetite. This has been explained by some physicians, on the necessity of a certain quantity of saliva being introduced into the stomach, which can only take place in a sufficient degree by the mastication of dry food; and from this we join dry nourishment along with the use of animal food; it forms also the proper medium to unite the oily and watery parts of our other aliment; and it possesses bulk without too much solidity, and firmness without difficulty of solution.

Amongst the Romans, a vast variety of different kinds of bread prevailed, depending on the different modes of preparing the grain, and also on the different methods of baking it; Egypt was their great emporium of grain, and was

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therefore stiled the dry nurse of Rome and Italy. Amongst the French a vast variety also prevails; but in Britain it is chiefly confined to three kinds---white, wheaten, and household---differing only in their degrees of purity. In the first all the bran is separated, and the flour is prepared in its pure state; in the second, only the coarser bran is separated from the flour; and in the third, there is no separation made at all. Any lesser kinds of bread that occur are generally prepared the same as the first, or of the fine flour. The preference which the farinaceous grains have acquired for the making of bread, depends on both being easily kept, and also on their possessing a greater proportion of the three nourishing principles than other vegetables. These principles are the amylaceous, the glutinous, and the saccharine; and of these, as wheat possesses most of the glutinous or animal principle, it therefore becomes the fittest of the grains for bread, and except it, none but two other substances, rye and potatoes, can be reduced to make good loaf bread.

By some authors, the knowledge of making bread, as practised at present, is said to have been known in the East at a very early period. This appears evident by the Jewish history; but the Romans were unacquainted with the modern practice of making bread till about 200 years before the Christian æra; in the southern parts
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of Europe this art was also known, but very little traces of it are found in the North.

Bread is of two kinds, leavened and unleavened.

Leavened Bread.

The first is subjected to the process of fermentation, the second consists of dough mixed with water. Leavened bread, also, is of two species; the first is made of dough set to ferment naturally; the second is, where a ferment is employed of vinous liquors.

By Natural Fermentation.

The first is a precarious uncertain operation in itself, and more especially so in its application to a fresh mass of unfermented dough. It is chiefly employed, in the southern countries of Europe.

It consists in mixing wheat flour with water, and forming it into a paste; the average proportion of these is two parts of water to three of flour, a proportion varying considerably according to the age and quality of the flour, for the better and older the flour, the greater is the quantity of water required. Thus the paste is formed; and being allowed to remain, its ingredients gradually act on each other. In consequence of this, new properties are acquired by it; its taste is changed to an acid, and an aerial fluid is evolved. Water is necessary to this process, and during its progress the gluten

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disappears.

disappears. A paste or leaven being thus prepared in order to use, a small portion of it is mixed with new paste, and this portion is sufficient to make the whole mass of new paste undergo the fermentative process. A quantity of gas is evolved from it, it swells in every direction, and the air bubbles it up and escapes every where. The nicety, therefore, in the making of bread with leaven, in this way, consists in apportioning the exact quantity of it that is necessary, in order that fermentation may be excited, and no more; for if not excited, the bread will be heavy; or if too much is used, it will acquire a disagreeable taste.

By Vinous Ferment.

From these circumstances, a different ferment is now used, and barm, or yeast, is preferred to leaven. This practice was first employed by the Gauls, and is now most prevalent. It is a mere active ferment, and less liable to accident than the leaven, even though it is subject to be used too cold.

Circumstances attending Baking.

When the bread is properly prepared in this way, it is then conveyed to the oven, where it remains till baked, in a heat of about 448°. This process increases its lightness by the evaporation of its moisture, for it loses in weight about one-fifth in the baking it, though this is regulated

regulated by the extent of its surface, and the time the heat is applied. It weighs, however, always heavier when first taken out, and turns lighter as it stands. It has also a peculiar smell and taste, when first removed, but on what these depend has not yet been ascertained. Nor is its apparent change by baking less remarkable, for all its original ingredients seem entirely lost, but any analysis as yet made of bread is imperfect.

From the use of the vinous ferment, British bread we find better raised than the French, and it is more spongy. It acquires, however, somewhat of a bitter taste from the hop, while the foreign, from the natural fermentation, tastes sour.

Unleavened Bread

Consists simply of a mixture of flour and water, which comes into a firm and tough cake, not having the advantage of fermentation to extricate its air. From its nature, therefore, it cannot fail to be of a close texture, and highly tenacious; but to obviate this, unleavened bread in its form is made as thin as possible, or spread out into cakes to favour its drying; and it is likewise heated suddenly, in order to render it more soluble, friable, and porous. Where these last qualities are attempted to be increased by the addition of butter, the bread is rendered more acescent, and apt to produce heart-burn.

Of unleavened bread, biscuit, in equal quantities, is more nutritive than leavened bread, and lighter on the stomach.

Preparations by Coagulation.

Besides bread, several other preparations are made by the coagulation of flour; these are, pudding, pancake, and baking paste.

Pudding.

Pudding is made either of flour, bread, or grain; the first is thickened into a firm mass, which would be indissoluble in the stomach were it not for the addition of suet.

Puddings made of bread, after being wetted, still remain easily soluble.

Puddings made of grain, as rice, millet, &c. have the grain first boiled, then dried to a proper consistence, and afterwards mixed with a variety of substances, milk being used in place of water, as giving a less tough consistence, for a solvent; and eggs being employed, from their animal nature, to obviate acescency.

Pancake.

Pancake requires a firmness of texture, and is therefore rolled out into thin plates, with much water to give it tenacity, and butter is added to prevent fermentation.

Baking Paste.

Baking paste is either made of flour or fermented bread; and, in order to be converted into various

various forms, when of flour, it is made considerably tenacious. This is effected by a large proportion of water, and its slow drying; while, to counteract its hardness and indigestibility, an addition of butter takes place, which is apt to produce heartburn and acescency, from the burning of the butter in the making of it, and the empyreumatic taint it acquires, this effect on the stomach is even increased.

RULES FOR THE USE OF BREAD.

In the use of bread after it is baked, much attention should be paid that it has parted with its moisture, and that it is perfectly dry. Without this its macilagenous part will prevail, and it will be more viscid and indigestible on the stomach. It is for this reason that new baked bread is improper, and in order to be wholesome bread, should either be allowed to be stale by keeping it some days, or it should be toasted to prevent its bad effects. Many have supposed that an excess of bread in diet is hurtful; but this must depend either on the improper state in which it is used, or on its not allowing a sufficient quantity of animal food to be conjoined with it. With respect to the first, bread not properly baked, that is to say, not having all its parts intimately mixed, and its fixed air expelled by the process of baking, will be apt in very small quantity to produce flatulence, acescency,

and indigestion; but on the contrary, if these circumstances are avoided by its proper and complete fermentation, so that it is spongy and porous, and it is kept at the same time till stale, no bad consequences, though used largely, will ever in healthy stomachs ensue. Indeed where a natural excess of acid prevails, by lying long upon the stomach it may produce viscosity, and retard the action of the intestines; but though bread, thus prepared, forms a wholesome nourishment, it is by no means the case when flour is prepared in the form of paste. Here the preparation is incomplete, and from its containing a considerable quantity of fixed air, it is apt to produce flatulent cholic, and alarming obstructions of the bowels.

Bread eat with butter is sufficiently wholesome and nutritious, and forms a mixture of animal and vegetable matter, of easy digestion, when blended with the fluids of the stomach.

Of the different parts of the bread, the external surface, or crust, is easiest digested; but it contains less nourishment than the softer part, or crumb. Toasted bread also possesses a somewhat astringent quality.

All the varieties of bread, then, may be considered as depending on the various species, and quality of the grain, or the time it has been kept, as lessening its tenacity, on the perfection of separation of the flour from the bran, on its complete fermentation in baking, or the expulsion of its fixed air, on the difference of the water, with
which

which it has been kneaded, and on the ingredients entering into the composition of the paste.

The proof of these circumstances will best appear by the easy solution of the bread in water, without rendering it viscid or tenacious.

From what has been observed then on the preparation of bread, it will appear that all forms of it where the flour is simply mixed with water, as in hasty pudding, vermicelli, and maccaroni, from its passing into a viscid mucilage, are highly indigestible on the stomach, and afford a nourishment very unfit for weak people, and for those who are in the state of invalids. Such forms should be only allowed to those who possess strong digestive powers, and who at the same time use much exercise to assist in getting rid of such a tenacious mass.

In the manner of using bread at table we are much regulated by custom. It is, however, more necessary to conjoin it with articles containing much nourishment in small bulk, than where the article is both bulky and nourishing. Its mixture gives a greater relish to our animal food, prevents the disgust which a constant use of the latter would soon produce, and counteracts the natural tendency to putrefaction of animal food. It has, however, long been disputed whether bread forms a proper food for infancy, for the first 4, 5, or 6 months. Indeed, after birth, bread seems little suited to the digestive powers of an infant's stomach, and it will therefore seldom fail if much is given, to produce flatulence and costiveness,
and

and to lay the foundation for obstruction, and other complaints. At a more advanced period however, or when a twelvemonth old, the use of bread is allowable, but still in sparing quantities which should be increased according to the vigour and exercise of the child. Where children are delicate, bread should be withheld for even a longer period, and the proper substitute for it, is biscuit powder in small quantities, or a well boiled decoction of groats. In a more advanced period of life, the quantities of bread consumed should be regulated by the age, sex, constitution, and mode of life. If a man of active life consume two pounds per day, the half should be sufficient for the sedentary and inactive, and even less for the sickly and invalid.

Though leavened or fermented bread, we have considered as lighter than unleavened bread, it is not to be denied that a great part of mankind live on it in the unfermented state. Thus the whole nations of Asia feed upon unfermented rice, and the Americans, for the most part, still make use of their maize in the same condition. Even in Europe unfermented bread, and other forms of grain in the same state, form a great part of diet. In Scotland, particularly, nine tenths of the lower classes of people consume their grain in this state. Nor are these forms of grain found to be attended with any bad consequences, even in the more sedentary and relaxed, independent of the robust and labouring. The proofs
therefore

therefore, of the hurtful effects of unfermented grain, as nourishment, are chiefly taken from the state of infancy, where every kind of food, except that supplied by nature, viz. milk, is improper till after the period of weaning, and after this period the introduction of grain, even in an unfermented form, will be found productive of no bad effects. Hence, however proper the progress of fermentation is to give lightness and digestibility to bread, experience shows that a great deal less is to be attributed to it, than modern refinement is apt to allow. The same sentiments seem to have been entertained by the best informed of the ancients, and Celsus, in the other extreme, considers unfermented bread, as even more wholesome than the fermented, though this is certainly carrying the matter too far.

Independent of its preparation it is perhaps not yet fully determined, what species of bread is most digestible. General opinion, however, seems in favour of the brown, rather than the fine bread; but to persons of good digestion the choice is of no great consequence. Fine bread is suspected at times to have allum mixt with it, which though by no means rendering it unwholesome, occasions it to become strongly acid on the stomach. Salt also renders bread more digestible, and at Geneva, where much salt is used, it is preferable in this respect to the bread of other places.

WHEAT.

Wheat is the most perfect of all grain, and is the most superior for making bread. With the exception of rice, it is also the most nutritive. It is resolvable into three distinct parts, an amylaceous part, or starch, a mucilagenous and a saccharine matter. The two first are of a vegetable nature, while the latter possesses the properties of animal substances, being susceptible of the putrefactive fermentation, and yielding the animal product volatile alkali. These three constituent parts of wheat flour may be obtained separate by taking some dough, and washing it repeatedly with water till it ceases to render the water milky or turbid the indissoluble part is the glutinous one, the other two are contained in the water employed in the washing. By leaving this water at rest, the amylaceous part settles at the bottom, while the saccharine principle remains alone suspended, and is easily separated by evaporation. A pound of wheat flour treated in this manner, commonly yields about four ounces of gluten, eleven ounces two drams of starch, and six drams of saccharine matter. So fine is the flour of wheat that it is scarcely possible, to make a search fine enough in order to hinder its transmission. It is also the grain of most plentiful increase even in this country,
and

and in proportion to its quantity conveys a more plentiful nourishment.

BARLEY.

Differs more than the other grains in the general size of its heads, and on the plumpness of its seed, though there is no essential difference to be perceived in its qualities. It is also a sweeter grain than most of the others, its saccharine matter being less involved in its other parts; hence it is the more common subject of fermentation. It is not, however, quite so nutritious as some other sorts of corn, and this arises in part from its breaking down into a very bulky meal, from which cause, when made into paste, it affords least solid food, so that it makes a lighter nourishment than the other grains. It is best used in decoctions, or mucilaginous drinks, as it renders them less viscid than any of the other grains. To the inhabitants of some of the northern parts of Europe, this grain is the principal article of sustenance. The bread formed of it has a sweetish, not unpleasant taste, but is rather viscid, and not readily digested. To render it sufficiently nourishing where used in this country, it is common to mix it with pease, or other of the leguminous products. And its deficiency of nourishment is farther confirmed by experiments on animals, which are found not
to

to be equally nourished by barley, as by several of the other grains. Barley, therefore, is chiefly preferred on account of its saccharine quality, and for giving out this under germination, or in the state of malt, so as to form by the process of fermentation various dietetic liquors, as we shall afterwards, under the head of drink, have occasion to notice. An infusion of barley in the state of malt, even without fermentation, termed wort, has been much employed against that disposition of body, which occasions scurvy, and with the most beneficial effects. In its unmalted state its chiefly employed as an aliment, particularly in the form of pearl barley, which consists of the decorticated seeds, and these are either boiled in broth, to give them a mucilagenous consistence, or a mucilage is made from the seeds themselves as a demulcent and nourishing drink, proper in many diseases. Before using them it is proper to remove by frequent ablution the mealiness the effect of long keeping which is upon their surface, and renders them musty. From late experiments it appears that the decortication of the seeds is not necessary in the making of broths, and that the entire and rough seeds of the common barley, may be used for this purpose with superior advantage, if the boiling of it is continued longer, and this state even adds to its nourishing quality. By dissolving sugar in barley water.

water, and evaporating it to the point of chrys-
talizing, a remedy is formed very useful for
coughs, and the pectoral complaints of chil-
dren.

OATS.

In the northern parts of Europe this grain is
the most useful, and is the principal support
of the inhabitants. It is particularly the food
of the people of Scotland, and formerly was
the same of the northern parts of England; and
from the state of health and vigour in these coun-
tries its nourishing quality appears indisputable.
The flour of this grain discovers little sweetness,
or it is less obvious from its being more inti-
mately blended with its other parts, but more
nourishment is obtained from it, than from the
same quantity of barley or rye. When toasted
it gives out what is called a kernel taste, resem-
bling that of the oily nuts. When fresh, it
discovers no bitterness, though this has been
alleged to prevail in the bread formed from it.
It possesses also no greater acescency than the
other grains, and when subjected to fermentation
it affords, like them, an ale, or malt liquorequally
agreeable to the taste, and without any parti-
cular bitterness. With respect then to its nou-
rishing quality, the excellence of this grain is
indisputable. In bread, it is generally used in an
unfermented state, or it is made into flat, thin cakes
which are baked or roasted. These cakes have
bitter

a bitter, dry taste which though disagreeable at first, comes by time to wear off, when they are found to be a pleasant and grateful food. Its decorticated seeds are also much employed in making broths, puddings, &c. and are found wholesome and gently laxative. Its mucilage, or gruel, is in much request as a diluent, and nourishing drink in cases of disease, and it is rendered agreeable by the addition of acids, or aromatics, or impregnated with medicinal substances according to the taste of the physician. It possesses all the qualities of being moderately nutritive, demulcent and aperient.

This mucilage is likewise prepared in an acidulous state, under the name of sooins, by allowing the seeds, or oatmeal and water, to stand together till the liquor acquires an acidity, when it is poured off and boiled into a jelly. This preparation has been found highly useful for the prevention and cure of scurvy, and has been greatly recommended by the first practitioners for this purpose.

The use of this grain has been particularly objected to, from its supposed tendency to heat, and to give heart burn. The proof of the first has been generally drawn from the cutaneous affections to which those parts of the island chiefly employing it are subjected. These affections, however, are by no means consequent of any particular aliment, but rather of a peculiar contagion, generated in a cold mountainous situation.

situation, and which equally affects the inhabitants of every similar situation throughout the whole of Europe. The tendency to heart-burn, also, is not peculiar to this grain, more than to any of the others; but the unfermented state in which it is commonly used, disposes it, as well as all other unfermented bread, to acescency, and from this acescency, heart-burn, and heat of stomach are naturally produced. Indeed the same effect is known to follow the use of wheat, when eat in an unfermented state. Oats chiefly differ from wheat in being of a more firm and compact texture. Hence they are less soluble, and if on that account they are equally nourishing the nourishment they convey is at least more permanent.

RYE.

Rye is a very common bread corn, among the northern parts of Europe. It is less nourishing than wheat, but a sufficient nutritive, and wholesome grain. To the taste it is sweet, and from accidents as well as this, it has peculiar qualities being in the countries using it the food of the poor, and therefore, not accurately cleared from its husks. It is more than any other grain strongly disposed to acescency hence it is liable to ferment in the stomach, and to produce purging, which people, on the first using it, commonly experience. It is also an improper food for the sedentary, as well as the delicate and nervous, for

for though it may afford a sufficient nourishment, its acescent tendency will increase the very complaints to which they are subject. Bread made of rye is of a dark brown colour, and always lies heavy on the stomach. When made without a separation of the bran, as used by the Germans, it is still more indigestible, but at the same time it is considerably nutritious. This nutritive quality of rye particularly appears by boiling it in water, for it gives out three fourths of its weight in mucilage. At the same time it does not impart like the other grains any milkiness to the water, which would show that its parts are under a peculiar combination, and its greater tendency to acescency than any of the other grains is also a farther proof of it. Rye has been supposed to be particularly productive of disease, when it is rendered unwholesome by the ergot, so termed by the French writers. This opinion is supported by experiments on animals, for a number of poultry and swine are said to have been killed by its being given them in this state. The truth of this, however, is equally supported by other writers, who, both from experience on themselves, and also by giving it to animals, found no fatal effects ensue from it. The only inconveniences known to arise from it were costiveness, and distention of the belly, inconveniences to which people are at times subjected who use it. At the same time grain when diseased or corrupted, it is clear, must be unwholesome, and
when

when largely taken and long continued, it cannot fail to prove highly pernicious. From this circumstance of its partieular tendency to disease or to be ergotted, it should be always mixt with other grain, so that any hurtful consequence from it may be thus counteracted. Where it has been used in this country, no peculiar effects have been known to arise from it.

MILLET.

Millet is much used as an article of food in Italy, France and Spain, and also in some parts of Germany. It is inferior to either oats, or barley, though from its sweetness it seems manifestly of the same nature with barley, and if its grain were as large it would be suitable for the same purposes. It is chiefly used in the form of mucelage, the flour being boiled with water and milk, so as to form a thick gruel or pottage, which is very nourishing, and by no means unpalatable; but is alleged to be crude for relaxed or inactive stomachs. It is also made into puddings and cakes, which are eaten with butter, and sometimes with wine. In Lombardy it is formed into bread, which soon becoming dry and stale is digested with difficulty; this grain has been alleged on no good foundation, though even that of Hippocrates himself, to produce constipation.

RICE.

RICE.

This grain is the chief support of the greatest part of Asia, is the general vegetable aliment of the east, and has been even long employed in Europe for the same purpose. The peculiar qualities of this grain are not easily ascertained. It discovers little sweetness, and it is not much disposed either to acescency or fermentation. But from its effects it is evident its nourishing parts must be in great proportion. Of all the grains it is certainly the most innocent, and the most useful in the case of invalids, it contains a thin, light and very soluble mucilage, which not being so disposed to acidity as the other mucilages of grain; it is therefore less flatulent, and sits easy on the stomach. It has been supposed to possess something of an astringent quality, and has therefore been ordered as a common remedy in bowel complaints; but it shows no marks of an astringent quality when put to the test; and its good effects can, therefore, only arise from its demulcent nature, as blunting acrimony, and soothing irritation. The nutritious quality of rice has been supposed by some, attended with one noxious quality; viz. being hurtful to the eyes, on no rational, or satisfactory foundation. The weakness of sight, and blindness of the Chinese, has been indeed ascribed to the frequent use of hot rice, but how

how this can operate, it is impossible to conceive, or in what manner it should differ, boiled, or in this different state, excepting in temperature, and softness, which can only increase its solubility in the stomach. The source of impaired vision, therefore, is more to be sought for in the abuse of venery among that people, with their immoderate indulgence in tea, and in other narcotic, and aromatic stimulents.

Rice is used in a variety of ways---in jelly, or decoction, which is made with it in the same way as with barley, and oats formerly noticed. Its chief consumption, however, is in puddings, and it is used as an ingredient in stews. Lately an attempt has been made by mixing it with wheat, to form it into bread, in the proportion of three parts of wheat, to one of rice, and one peculiar quality it is said to possess, that its mixture corrects bad wheat flour. In this climate, rice, is generally very quickly digested, and the return of appetite takes place soon after its use. In the warmer climates, however, from the relaxed, debilitated state of the stomach of the inhabitants, it is found necessary, in order to prevent its lying long upon them, to conjoin it with a considerable quantity of strong spices. This grain is very much used in Carolina, and no bad consequence is found to follow it, a proof of the insufficient grounds on which its tendency to produce blindness is built.

On the whole this grain both for extent of produce, its proportion of nourishment, and its goodness

ness is preferable to all others ; its flour being finer, and its texture more tender than any of them, which is particularly apparent by macerating the different grains in water, for of all of them the rice swells to the largest size ; a proof its parts are more intimately divided.

Maize or Indian Corn.

This kind of grain is the chief article of sustenance in America and some parts of the West Indies. It affords a flour of the best quality, and largely nourishing both to men and animals. The ripe seeds are of a firmer and more solid texture than those of any other grain, forming a very hard substance, but which comes to be broken down into a very fine meal. This meal has little sweetness, and no acidity can be perceived in it ; with water it forms the most gluey viscid matter of any of the farinacious seeds ; neither does it ferment well, either by itself, or even with yeast. Hence it never gives a light bread ; neither, with every advantage in the conduct of its fermentation, and also in the drying of it, can it be made to possess the same friability as the European grains ; it agrees therefore best with a mixture of wheat flower, and it should be boiled to the consistence of paste ; the wheat flower is then mixed, when it may be reduced into excellent loaves. But though from this circumstance it is a food rather unfit for weak stomachs, it is a grain of a wholesome nature, and gently laxative. In those countries where it is raised, and also in the southern

southern parts of Europe, a number of preparations are made from its meal. In Italy it is used in the form of cakes, and the celebrated *polenta* of the Italians is prepared from it. Like all other grain, as being capable of fermentation, both beer and ardent spirits can be produced from it.

Buck Wheat.

Buck wheat is employed in this country very rarely as food; it is a hard, viscid, and less soluble substance than any of the other grains, so that it cannot be reduced to a fine enough meal, nor easily opened by fermentation, to prove useful as food. In the province of Brittany, however, it is employed as bread, in the form of cakes. It affords a very strong, thick mucilage, which on many parts of the Continent, is successfully had recourse to, by the people, to check looseness and other bowel complaints; but the chief use of this mucilage is in the operation of weaving, to give tenacity to the fabric of the yarn.

Manna or Flote Fescue Grass.

This substance derives its name from the remarkably sweet and agreeable taste of its seeds, a quality which is strongest before the plant comes to its full growth. It is gathered yearly in Poland, and from thence carried into Germany, and even to Sweden, and sold under the name of manna seeds. They are much used at the tables of the great, on account of their nutri-

tious quality and pleasant taste. Indeed they excel, in the richness of their nourishment, all the vegetable productions of Europe, and make an excellent foundation for soups, as well as puddings; along with milk, two ounces of these seeds, are a sufficient meal for the most active man, and, when ground to flour, they make a food very little inferior to that in common use. Their mucilage, prepared with sugar and white wine, makes an excellent nourishment for invalids.

Guinea Corn.

Guinea corn, is the common food of the slaves in the West Indies, by whom it is termed Guarnot. By them it is prepared in a variety of forms, as into pap, pudding, bread, &c. It is a grain very nourishing, but not very easily dissolved in the stomach, and of a constipating nature. It is a food only fit for those who pursue an active and laborious life.

Sago.

This substance is prepared, from the pith of a species of the palm tree, growing in the Mollucas, and other islands of the East Indies, especially along the coast of Malabar. By some it is said to be made from the kernel of the nut found in the fruit. It is used as bread by the natives of India, who macerate it in water, and prepare it by pounding it, after which they form the fine part, which passes through a cloth, into cakes. The grains of

sago

sago sold here are obtained in the same way, but by a more tedious process. When brought here it appears to be a bland, farinaceous substance, which by being boiled in water is resolved into an insipid, inodorous, almost transparent jelly. Its gelatinous state, points it out as a nutritious matter, and from the viscosity of its mucilage, it is much less acescent and flatulent than any other grain, so that its mucilage will keep long, without any tendency to fermentation. The same substance is also brought from the West Indies, but it is inferior to that brought from the East. So considerable is its nourishing qualities, that it forms a chief part of the food of the inhabitants of the East, from whence it is brought, and the value put upon it by the Japanese, as an aliment, is very great. The exact proportion, however, of its nutritive qualities, it is impossible to determine in this country, as it is only given as a temporary nourishment. The same substance as sago, may be even procured from some of our own farinaceous matters, and directions have lately been given, for preparing it from the potatoe. Before using sago, it should be well cleaned, and to make its solution complete, the first decoction should be strained, and afterwards boiled a second time for about half an hour. To make it palatable, it is customary to add to it, when boiled or softened with water, some lemon juice, su-

gar, and wine. In this form it is a fit article for the sick and convalescents.

The same sort of substance, from another species of the palm tree, is used as bread by the Hottentots, and they prepare it, by previously softening it, or rendering it mellow by burying it for some weeks in the earth.

Salap.

This is a preparation of the root of the orchis, which grows plentifully in Turkey and Persia, and it differs nothing from the root in this country, except in size. The preparation consists of a sweetish, mucilaginous, and highly nutritive powder. Thrown into water, it melts into a mucilage of a smooth taste, somewhat sweet: both its taste and mucilage clearly show it a farinaceous matter, and it is liable also to the same inconveniences as other farinaceous matter, acescency and fermentation. By a proper management, it connects a large portion of water into jelly, and it is extremely convenient for giving a ready mucilaginous drink. Hence it is a useful article of diet for the sick and invalids, and particularly in cases of acrimony, either in the general habit, as in hectic fever, or consumption; or in particular secretions, as in affections of the urinary passages, as inflammation, stone, or gravel; and also in affections of the bowels, as looseness and dysentery. Though thus exceedingly demulcent, the exact degree of its
nourishing

nourishing quality has not been fully ascertained.

Tapioca.

This is a highly nutritious mucilage, prepared from the root of the two shrubby plants, the bitter and sweet cassada. It intirely resembles the sago and salep in its general texture, and is therefore a proper article of diet for the sick and convalescent. The plants from which it is formed, possess in their recent state, an acrid, poisonous juice, which renders them unfit for use till this acrimony is removed by pressure and heat, after which they are safely eat, made up in the form of thin cakes, in the West Indies, where they are chiefly produced.

Indian Arrow Root.

Indian arrow root is another article of the same kind, lately imported from the East Indies. It agrees with the former articles in its general nutrititious property, but is reckoned to excel them so far, as to afford a much larger proportion of mucilage than any vegetable hitherto discovered.

Iceland Liverwort.

The Iceland liverwort is a highly nutritious substance. In order to use, it requires, by previous maceration in hot water, to be deprived of its bitterness and laxative qualities. It is then boiled

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with

with a fresh quantity of water, to which it gives out its mucilage; it is afterwards mixed with milk or broth. Boiled with milk alone, it yields a wholesome and palatable nourishment much used by the Icelanders; in this country it is chiefly used, from its demulcent quality, by invalids and convalescents.

To this class of the farinaceous seeds, may be referred from their uses, though they are properly fruits, the following articles which form substitutes for bread.

Bread Fruit.

Bread fruit is one of the most useful vegetable productions known; it requires also no trouble in its culture, and equally little in its preparation as food. It is used in the green state, being simply roasted till the outside becomes scorched and black; this part is then rasped off, when the part below, which is soft and white, is used for bread. This part resembles the crumb of new bread, is wholesome and nutritious, and resembles in taste a sweet potatoe.

Bread Nut.

The boiled fruit, termed the bread nut, is a wholesome, not unpleasant, nutritious food; so much so, as to have formed at particular times of scarcity, the sole sustenance of the negroes and poorer classes of inhabitants in the West Indies.

Plantain

Plantain Fruit.

This fruit is highly nutritious, and found to answer better than either wheaten bread, or that from maize with the negroes. Hence, either roasted or boiled, it is used as a substitute for bread in the West Indies and South America.

Banana Fruit.

This is a much more palatable production than the former, and its dried pulp is often used in the West Indies, by dissolving it in water, for preparing a refreshing beverage.

PULSES.

The second division of the farinaceous seeds or the *pulses*, includes all the leguminous productions, which differ little from the grains; they are indeed more nourishing, and afford much of the glutinous or mucilaginous principle; they are not however so completely digestible as the grains, and the bread they afford, is therefore, apt to occasion flatulence, and to lie heavy on the stomach. Hence it is best prepared by the acid, or natural fermentation, which gives it a laxative tendency. From the quantity of fixed air contained in, and extricated from the pulses, their bread becomes improper for weak stomachs; but it forms, at the same time, a strong, permanent

pure

food for the robust and laborious, far exceeding the grains in the proportion of its nourishment. The mixture of pulse bread with other kinds of grain, particularly with wheat, lessens no doubt in part these disagreeable qualities. The powder of this division of seeds, has a more unctuous softness, and a sweeter taste, than that of grains; and when triturated with water, it gives out a milky solution.

From these two circumstances, then, of the more oily nature of this division of vegetable matter, and the large proportion of fixed air it contains, the use of the pulses is more circumscribed as an aliment, and confined chiefly to the lower classes, or those that possess strong digestive powers; for in other habits the symptoms of uneasiness that arise from their use, particularly, flatulence and cholic, are often exasperated to such an alarming height, as to form actual disease. That a mixture of them with other grains, is intended, perhaps, by nature to correct the particular qualities of each, would appear from the soil requiring an alternation of the grains and pulses, to preserve it from being exhausted; and, from the pulses being what are termed ameliorating crops, a constant supply of this species of nourishment is afforded, without rendering the soil unfit for the production of either. The pulses are generally used in two different states; in the immature state, or as a green succulent food, when they possess their
nourishing

nourishing quality only in part, and their oil is not thoroughly evolved; and in the mature state, when their several parts are come to perfection and are capable of being converted into bread. In all their intermediate stages, their qualities vary as they approach more or less to the one or to the other extreme.

Pease.

Pease are a pulse much used; the smaller and greener they are, the more agreeable is their taste; in this tender state they form a wholesome and light food. Their husk is also a tender and soluble substance, and is never separated from the fleshy part of the pea. When full grown and dried, pease afford again a strong nourishment; when triturated with water, they yield a sort of emulsion. Bread made from pease, without a large admixture of wheat, is hard, heavy, and unpalatable; but, by steeping the meal in water, the harshness of its flavor may be taken off, and afterwards, when mixed with wheat flour, its taste is hardly perceptible. The boiling of pease flour previous to its admixture with other grain, renders its incorporating more easy, and adds also in some degree to its wholesomeness. Pease are generally preferred to the other pulses for culinary purposes, particularly for making soups and puddings. For the making of soups, pease should be boiled whole, then split and deprived of their husks,

for by this means the grinding of the pease is promoted, and they are also prevented from turning acid on the stomach, and from affecting the bowels, which split pease are apt to do.

Beans.

Like the pease, the beans in their immature state, and when green, are a wholesome garden-stuff, but subject to the same fault as other pulse, in possessing a tendency to flatulence. When fully ripe, the bean affords the same meal as the pease, and the same inconveniences attend its use as bread with what were taken notice of in respect to pease. Beans were particularly forbid by the Pythagorean system, on the supposition of making women barren.

Kidney Beans.

The kidney beans, in this country, are only employed as a succulent food; and perhaps some species of the pease might be used in the same manner. When well boiled, this substance is palatable, though not very nourishing. Kidney beans possess a tendency to promote the excretion of urine. In their ripe state they are little known in this country; they are, no doubt, in this state considerably nutritive, agreeing in this respect with the rest of the pulses, and attended at the same time with those similar inconveniences which the other pulses display when ripe. Their husk possesses a bitter, disagreeable taste,
and

and when deprived of this, they are found to be more tender and soluble than the other pulses, even the pea. Hence they are frequently imported for the purpose of puddings, in the same way as pease.

Lentils.

Lentils are smooth and soft to the taste, and are of two sorts, varying in size and colour. They are either used whole or in soup, and they possess much the same faults and the same properties as the other kinds of pulse.

Chesnut.

The chesnut, as affording no oil by expression, more nearly resembles the grains and pulses than the oily nuts. The raw fruit, however, is not readily dissolved in the stomach; but when properly mollified by roasting, it is rendered abundantly light and nutritive. In all cases, the fruit is found rather astringent to the taste. The chesnut has a good deal of sweetness, which is increased by the application of heat, and the fermentable nature of its juice shews that it is possessed of a saccharine nature. After being gathered, chesnuts should be kept for some time before they are eat, which increases their digestibility, and by the greater evolution of their saccharine principle, makes them more agreeable to the taste. Chesnuts can be reduced into a farinaceous matter, fit for bread, when treated
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in the same way as other farinaceous seeds. Their nutritious qualities are well known in the southern parts of Europe, and they seem to resemble the pulses more nearly than the grains. They form the chief part of food to the lower ranks of people in the plains of Lombardy, and it is probable that they were the food of the ancients, rather than the acorn of the oak, which is hardly capable of being food. From the firmness of its texture, the chesnut must be clearly a food of difficult digestion. In order to form it into bread, it is first dried and then reduced into meal, but it forms a heavy, lumpy bread.

OILY NUTS.

The oily nuts belong properly to both the classes of grains and pulses; they are of the same nature with the farinaceous seeds, but hold a considerable quantity of oil in their composition; and this oil is not, as in the pulses, intimately mixed, but can be easily made to separate, and is obtained by proper expression. In what manner it exists in the seed, before expression, is not very clear. It has been alledged that, even in its natural form, it exists separate, lodged in certain cells, distinct from the rest of the substance of the seed; but these cells have never been discovered, and in treating some seeds, the whole of their substance can be extracted in mucilage, without any separation of oil.

oil. Yet in whatever state this oil exists, from its entering their composition these nuts or kernels are exceedingly nutritious, in a proportion greater than any of the farinaceous seeds, and therefore they properly form a part of diet. The nourishment they afford is always greatest in their mature state, as then their greatest quantity of oil is evolved. The chief difficulty in the use of nuts as food is their difficulty of solution in the stomach. All oily matters resist fermentation, and therefore the process of digestion; and to counteract this, their mixture with acids is necessary, either previously provided in the stomach, or used along with them. But as this oil in the nuts is not in a separate state before going into the stomach, it cannot receive this mixture previous to being taken, and when taken, it requires much time to produce its separation from the other parts with which it is involved. Hence the nuts cannot fail to be a hard indissoluble nourishment. Their oil, also, when separated, is apt to turn acrid and rancid upon the stomach, and to occasion heartburn. They should therefore, as a proper precaution, be eaten only when fresh; and their skin, which is very astringent and unwholesome, should be carefully removed. In eating them, they should be well chewed to favor their digestion; and they should be sprinkled with salt, by which they are formed into a soapy mass, and rendered miscible with the fluids. In no
case

case should they be eaten in quantity, as alarming complaints have been known to be produced by them, particularly of the stomach and bowels; and they have been also alledged to occasion difficult breathing and asthma. The best form of using them is when made into puddings and emulsions, their tenacity being in some measure broken by the sugar.

Filbert.

The kernels of the filbert contain a large proportion of mild oil, which is less in the filberts of this country than in those of more southern regions. The round kernels are most esteemed. In eating them, the skin should always be carefully pulled off, for it is apt to adhere to the throat for a long time after, and to excite coughing. When fresh, and well chewed, a small quantity of them is not unwholesome. They are frequently made into comfits, by covering them with sugar, which assists their digestion.

Almond.

Of this kernel there are several varieties, but the sweet almond is the chief one in use. It is of a pleasant flavor, and exceedingly nutritious from its quantity of oil, which is said to constitute nearly one half its weight. From this, however, it is heavy and indigestible in proportion, more especially if kept, and its oil has become rancid. From the skin containing an

an acrid matter, it ought to be carefully pulled off, to prevent its irritation in the throat, or oppression and heartburn on the stomach. Almonds are no where used in such quantity as to afford a food.

The sweet and bitter almond agree in their proportion of flour and oily parts: the only difference is in the bitter of the one species, which is being the same with the laurel bitter, is of a poisonous nature, especially to many animals. Of this acrimony it can be deprived by heat; hence bitter almonds are used in baking; but when fresh they are a dangerous food. Sweet almonds are used in a great variety of confectionary, and sometimes in soups. It may be observed, also, that the oil of the bitter almond is not so apt to become rancid as that of the sweet.

Pistachio Nut.

The pistachio nut agrees with the almond in its general properties, but it is softer and considerably more digestible than the almond, from its containing a less proportion of oil. This fruit is of a green colour, intermixed with red, within, and green without, and of a very agreeable taste. In moderate quantity it proves not unwholesome, but when eaten to excess, it is attended with all the bad consequences we have enumerated as peculiar to this class of oily nuts.

Cocoa

Cocoa Nut.

The most important, perhaps, of the oily kernels, is the cocoa or chocolate nut. In this substance, the oily and farinaceous part seems more intimately blended than in any of the other seeds; and even when separated, this farinaceous part can be united with the oil by triture. These two parts seem in as large proportion as in the other nuts, with the peculiar quality that it is not so liable to rancidity. Hence chocolate is equally nutritious with any other oily nut, an ounce being reckoned equal in point of nutriment to a pound of meat, and it is at the same time less offensive to the stomach. Where the stomach takes offence, it is only where the triture has not been so complete as to make an intimate union of the two parts. But by the mode of preparing chocolate now employed, this union is so complete, that the chocolate can be equally diffused and almost dissolved in water or milk, without shewing any particles of oil floating separately on the surface; and it is on this complete union that the easy digestion of this substance in the stomach depends. The white kernel of the recent nut is much liked, and eaten freely in both the Indies; and in this country it is even used as a beverage in the dried state; but its best preparation is certainly in the form of chocolate, and of chocolate that made in England

land is preferable to either the Spanish or Portuguese.

The quality of the cocoa nut depends on its size, and the place from which it is brought; the best being the produce of Mexico, though the greatest quantity of the article is now introduced from the West Indies.

The expressed juice from the mucilaginous pulp in the husk, is a liquor resembling *cream*, of a grateful taste and a cordial quality. The oil of cocoa, in its separate state, is used as a cosmetic for rendering the skin smooth and even, in America, and it leaves, when used, no appearance of unctuousity behind it.

Walnut.

Walnuts are more oily than chesnuts, and have their oil also in a more separate state. The kernel of the ripe fruit is highly palatable and nutritious; but before being eaten the skin should be carefully cleared from it, as containing an acrid bitter and astringent matter. The green unripe fruit, steeped in vinegar, forms one of our most sapid pickles.

Cashew Nut.

The kernels contained within the kidney-shaped nuts of the West India *Anacardium*, are sweet and palatable, and they agree in properties with the other oily nuts described.

White

White Poppy Seed.

These seeds are equally nutritive as the kernels we have mentioned. They give out a mild bland oil, on expression, and they possess not the slightest degree of narcotic quality, which is entirely attached to the capsules or poppy-heads; this is confirmed by their having been employed in diet in considerable quantity, without any bad consequence ensuing.

Potatoe.

As an intermediate substance between the farinaceous seeds and roots, we have placed here, though properly belonging to the roots, the potatoe.

The potatoe was first introduced into Europe in 1486, by Sir Francis Drake, and is originally a native of Peru; where, unless reared under a particular management, by little exposure to the sun, it possesses much of the quality of the nightshade, to which species it belongs. The potatoe is now a root of the first importance in Europe, as affording a mild wholesome nourishment; and next to the grains, it is most used of any vegetable production. The attention paid to its cultivation has produced a great variety of species of it; and they may be yet increased from the seed contained in the apples; but this variety differs only in the proportion each possesses of its constituent parts. The light, mealy potatoes are the best. The
constituent

constituent parts of this root, when examined, consist---1. of a dry powder, or starch, as in grains---2. a fibrous matter, of a grey colour, similar to the roots of pot-herbs---and, 3. a mucilage, resembling that of the esculent plants. By the process of boiling, these parts become intimately blended, have their solubility increased, and become easier digested. This root, in many countries, affords the chief proportion of their nourishment; a proof of its wholesomeness and alimentary quality, for both men and animals are known to get fat under its use; though, in proportion to bulk, it does not afford the same quantity of nourishment as the grains. From its possessing such a large proportion of watery parts, nearly one half, it cannot fail to be easily digested, and to pass in a very short time into chyle. Hence it is by no means of itself a permanent nourishment, and the appetite sooner returns after it than after most other kinds of diet. Flatulence and heartburn are also very seldom known to arise from it, though continued in very great quantities; and in many cases where vegetable diet comes to be prescribed, it has been the only substance found to agree. From its constituting an article in such general use, it has come to be prepared in a variety of forms. It is used in bread, its flour is employed in pastry, and it is also converted by the French into a sago and salop.

Though

Though we have mentioned the potatoe as a root, it is not properly the root of the plant, but rather a sort of under-ground fruit, produced upon a confined branch. The real roots do not produce potatoes; they only serve the purpose of drawing nourishment from the soil, as the leaves above extract it from the atmosphere. The potatoe below, and the apple above, are in fact the same; but being in different elements, they assume different appearances. The one seems to be intended for the preservation of the species, the other for the food of animals. Such is the prolific nature of this vegetable, that from one large potatoe 8st. 8lb. of good sizeable ones have been produced. As an article of sustenance, the potatoe is greatly recommended by its palatable nature, and by its being reared at little expence. Hence it is well suited as a provision for the poor. Potatoes are never unwholesome but from being reared in a bad soil, improperly preserved, or eaten to excess; circumstances which can all be easily guarded against. Given raw, they have been found highly useful in scorbutic complaints.

By some authors, potatoes have been considered as possessed of noxious qualities. But experience gives no sanction to this opinion; and had it been just, the truth of it must have been completely established long before this time in an article which forms so much the diet of the poor in every country, and especially in Ireland, where

where, on the contrary, the most healthy people are reared.

ROOTS.

The next division of vegetables after the farinaceous seeds, is into the esculent roots, as they are commonly used at table, and they differ from each other either of a mild, insipid nature, or of an stringent acrid kind. The former are purely nourishing, the latter possess something of a medicinal virtue, or at least are strongly stimulent. Roots are neither so nourishing as the grains, nor so easily digested as animal food. They contain, however, a greater quantity of alimentary matter, than the leaves of the plants to which they belong, and from a number of them, by means of a particular preparation, a considerable quantity of farinaceous product can be procured. But it is chiefly in the state in which nature presents them, that we are to consider them as food, and in this state they are for the most part agreeable to the palate, so that we feel for them, a natural and permanent appetite; a proof they are intended for our food, and conformable to our nature.

NOURISHING ROOTS.

Beet Root.

The beet root is of two kinds, the white and the red. Both possess an emollient quality.
The

The red kind is particularly used in a preserved state, and also to improve the colour of claret. The root of the beet, contains a considerable quantity of saccharine matter, so that by experiment, from fourteen pounds of it, a pound of sugar has been procured. Hence it cannot fail to be possessed of a considerable nourishing quality. In order to be easily digested it should be much softened by boiling, and also to render it less flatulent, its use should be conjoined with some of the more farinaceous, or else of the stimulent vegetables. From its aperient nature it is proper for habits disposed to constipation, and its use is perhaps not so general, as what, from its sensible qualities, it deserves.

CARROT.

The carrot, like the beet, yields a considerable quantity of rich saccharine matter, in the form of syrup. The best carrots are of the deepest red, and they are most in season from July to December. From their quantity of saccharine matter they are considerably nutritive, and when sufficiently boiled as little flatulent as most of the esculent roots. When eaten freely, like the beet, this root proves somewhat laxative. Along with the sugar of the carrot, there seems contained in it a quantity of mucilaginous matter, which adds to its nourishment; and from experiments on animals, it appears to possess this property in

in a great degree. By man it is not used in such a quantity as fully to determine this. It forms also on many occasions, a useful application in cases of topical disease. Where carrots seem to lie heavy on some stomachs, their solubility may be assisted by the addition of condiment and salt; which will also prevent their tendency to fermentation, and of course their occasioning uneasiness in the stomach; for with many stomachs the digestion of carrots is peculiar, and they pass through the body in an unchanged state. This root seems to have been first introduced into England by the Flemings in the reign of Queen Elizabeth. A marmalade made of carrots has been found a useful medicine against scurvy.

Turnip.

The different species of this vegetable, whatever the form or colour of the root may be, afford a light and wholesome nourishment. The turnip possesses a much larger quantity of mild pulp in proportion to its cortical part, and in the cortical part only does any acrimony of the root reside. This part is generally separated before use, so that the pulp is used as food. The pulp is only a watery and tender substance, easily digested and occasioning little flatulence. It has some sweetness, but does not contain a nourishment equal to its bulk. By experiment

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neither sugar nor an amylaceous matter can be extracted from it. The turnip is of two kinds, distinguished by its colour, the white and yellow. The latter has only lately been introduced into this country. It is more of a saccharine and mucilaginous nature, and therefore more nourishing than the white; and from its standing the winter better, it has come into more general use. Turnips are much used in the feeding of cattle, and for this purpose the largest, and most watery kinds are preferred. As they are given to them in the natural state, and with the cortical part, this part has been said to communicate its acrimony both to the flesh and the milk of the animal. Since it is not, however, constantly the case, it must be combined with some peculiar circumstances not sufficiently attended to. Turnips, are reckoned best in the months of September and October.

Parsnip.

This root is very nutritious, but, from its peculiar sweet flavor, it is disagreeable to the taste of many. From experiments on animals it is found to be considerably fattening, and, besides its saccharine matter, it contains a considerable portion of mucilage, which prevents its sugar forming into grains, but at the same time no way diminishes its nourishing quality. To render it properly digestible, it requires a great degree of boiling, and its natural sweetness

We find no way impaired by this operation, unless it is done twice with different waters. This root is considered to contain something of an aromatic principle, and it is alleged that it even becomes poisonous, if it is suffered to remain in the ground throughout the winter.

Skirret.

In the recent state the roots of the skirret, possess a firm consistence, which is softened, or acquires a tender texture, by boiling. It has an agreeable, sweet and spicy flavour, and it has been found to yield a large proportion of sugar, and amylaceous matter. Hence it cannot fail to be considerably nourishing, and without much flatulence. The same objection, however, applies to it as to the parsnip, in the peculiarity of its taste, which prevents its being so generally used as the other roots.

Viper's Grass.

The root of the viper's grass, or Scorzenera, is mucilaginous and slightly nourishing. In using it, the raw root should be first soaked for half an hour in cold water, by which it will lose its bitter taste, and be likewise rendered less flatulent. It should then be deprived of its skin, and eaten boiled.

Goat's Beard, or Salsapi.

This root contains a sweetish, milky juice, and possesses more of the saccharine principle, and consequently more of nourishment than the viper's grass. It is reckoned by some a good substitute for asparagus, and from being a hardier plant requires attention on this account.

Spanish Potatoe.

This root differs from the common potatoe only in its degree of sweetness, and therefore, cannot be used so constantly as an article of food.

Yams.

Are of the same kind as the above, with the same objection from their sweetness, which renders them less pleasant to European palates; they constitute, however, the chief food of negroes in the West Indies.

Jerusalem Artichoke.

The knots or tubercles of these roots when baked, roasted or boiled, acquire a mealy nature like potatoes. They are of a sweeter taste resembling the yam, and being equally wholesome and nutritious, may at all times be used for the potatoe.

ESCULENT ROOTS.

Radish.

Radishes of all sorts, from their acrimony, are only used as a sallad or condiment. They are of several sorts, differing in the colour, and shape of their roots. All of them are pungent, and acrid to the taste; and the peculiar acrimony of their root is lodged in the cortical part; besides which it possesses in proportion a larger quantity of alimentary matter. All the species of this root abound in water, and afford little nourishment. They are therefore chiefly used in their recent state along with their cortical part, as a condiment against acescency; and they are peculiarly fitted to dissolve insipid phlegm or slime, and both to generate, and to expel flatulence, which the stomach is not active enough to expel. Radishes when boiled lose entirely their acrimony, when they might be used as the turnip, or other vegetables, were their roots sufficiently large to render them an object in this way. The small radishes are preferable to the large ones, as their indigestibility increases along with their age. After using them, the breath in general acquires an offensive taint

Horse Radish.

This is a warm, pungent root, and much used as a condiment. It differs from the other radishes, in preventing flatulence, and powerfully promoting

promoting digestion ; it is also of a strong diuretic nature, and thus it discharges all the parts of the blood which have degenerated into an alkaline acrimony. In other respects it differs nothing from the other radishes taken notice of.

Cellery.

This plant is much used as a pot-herb. It belongs to a class of plants that possess a poisonous acrimony, and on this account it is necessary to blanch it, though it never can be entirely deprived of its acrimony in this way ; but when boiled, or stewed, this acrimony becomes still more diminished ; and it then acquires a mucilaginous sweetness, and of course a nutritive quality, being used very much in winter in animal soups, at which time of the season, from its acrimony, it is fittest to be used. In spite, however, of its acrimony, it is to be considered as one of the most fragrant plants we possess ; and on that account, from its more agreeable taste, it is more used than any other of the blanched plants. It is divided into two species, both equally esteemed for the table, the one possessing thick, knobby roots, the other having a great number of white, small, and tender ones. This last is the species most commonly used in Britain ; while the former kind is preferred on the continent ; and being previously soaked in vinegar, it is eaten in thin slices ; which mode, or boiling it, renders it easier of digestion

digestion to the stomach. From the fragrance of this plant, it is often prepared into an artificial coffee, by cutting it in small square pieces, and drying and roasting it the same way as coffee; from its diuretic quality, it makes a useful if not a superior substitute.

Parsley.

Parsley, in its root and leaves, is slightly aromatic; its seeds are even more so; its roots are somewhat nutritive, and the seeds possess a diuretic quality. Parsley, from its stimulating and aromatic nature, is a common addition to broths and soups; when boiled, it is of a mild aperient nature, and is therefore most salutary when eaten in this state.

Onion.

The onion is much employed as an alimentary matter, and affords a large proportion of nourishment. This appears very much in their boiled state; by which process their acrimony is exhaled, and they then discover a large proportion of mucilaginous matter along with some sweetness. When young, their acrimony being but small, they are much used by the vulgar as a part of food; but in common, even in this state, they are only used in small quantities as a condiment. Their chief use therefore is when they are deprived of their acrimony by roasting and boiling, and then they are put into sauces, and used in a variety

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of

of other forms. As stimulants, in their natural state, they assist digestion, comfort the bowels by expelling flatulence, resolve viscid slime, increase the appetite, and, from these qualities, are a useful and principal condiment. In a medical view, the onion is diuretic and expectorant, and therefore recommended both in asthma and dropsy. The roasted onion is a favourite food with many people. As an external application, the onion forms a useful and powerful domestic application, in cases of swelling and inflammation.

Leek.

The leek differs very little from the onion, and like it is used much in broths and soups; but it differs from the onion, in retaining its acrimony most tenaciously in the boiled state; neither is it so easily digested as the onion. And from these circumstances of its not being so easily broken down, and its being less agreeable to the taste, it is not so much used in diet as the former article.

Garlick.

The garlic is too acrid to be used in any other form than in small portions, in the way of a sauce or condiment; but in Spain, the garlick, being equally mild with the onion, is used as ordinary food. Like the other articles of this kind already noticed, garlick has its acrimony much dissipated by the common culinary preparation

ration, and a remarkably mild substance remains, which, if it could be easily digested raw, would convey a great deal of nourishment. In this country, it is too stimulant to be used for any other purpose than a condiment. This root was much esteemed by the ancient Egyptians, who considered it as an antidote against diseases.

Shallot, Rocambole, and Chives.

The shallot is a species of onion, possessing the same qualities as it and the garlick, though not in so strong a degree as the last. It is originally the production of Ascalon, a town of Judæa.

Rocambole and chives are entirely of the same nature, and agree in their general qualities and uses.

All the articles of this kind, from the onion to the chive, possess a penetrating volatile smell, which they communicate to the breath of those who use them. They agree best with those of a cold and phlegmatic habit, where the stomach is weak and relaxed, and where it requires the aid of a powerful stimulus to assist digestion.

HERBS.

The third division of vegetables comprehends herbs, by which is meant the leaves and stalks of such productions as are eat at table in the form of greens and sallads. They contain much

watery matter, and little nourishment. They assist, along with other diet, in distending the stomach, a necessary step to its reacting on its contents, and its effecting digestion. They also in some degree resist putrefaction, and are therefore most abundant in summer, the fittest season for their use. Being generally also of a solvent nature, they are highly serviceable in constitutions subject to constipation. From their cooling nature, they are particularly adapted to obviate an inflammatory and hectic state of habit. They tend also to promote, in a certain degree, the several excretions, particularly that by the urine. They are chiefly of a mild, insipid nature, and discover little either of mucilage or sweetness, so as to discover marks of a nourishing quality; they contain, however, a quantity of air, and from their acescency and tendency to fermentation, they must possess a saccharine principle in a slight degree. They are properly selected by the tenderness of their texture, for by this quality chiefly are they fitted for being aliment; and it is to this tendency to texture and disposition to fermentation, they owe any laxative property they possess. In order to give them this softness of texture, which constitutes their principal recommendation, much boiling is necessary; and in the more tender kinds, or those that consist of leaves, the boiling will be best conducted by steam, and their colour at the same time preserved. In those that consist

sist of stalks, and are of a firmer texture, long boiling, or rather stewing, is more proper. To render them more readily digestible, and obviate flatulence, as well as improve their taste, they should have, when eaten, the addition of condiment; and this addition is still more necessary when used in a raw state. The sallads, indeed, are rather to be considered as articles of luxury than of aliment; such of them as are the most bitter, are found the most digestible; and their digestibility seems to be retarded by vinegar, while it is of course increased by the process of boiling.

Spinage.

Spinage is one of the tenderest of the greens, and is therefore most justly preferred to most others. It is, however, but an insipid herb, passes quickly through the stomach, and therefore affords little nourishment. It is liable, also to produce acescency, and therefore to occasion cholic, where eaten to excess by weak and debilitated stomachs. It seems to have been a plant unknown to the ancients, at least we have no accounts of it from them. Where it agrees, it is one of the most cooling and least irritating of the aliments.

Asparagus.

Asparagus is a preferable article to the former; it is mucilaginous, and quickly dissolved in the stomach, and it is little disposed to flatulence or

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acidity,

acidity, which is a strong recommendation of it. It may be considered, indeed, as an intermediate substance between a root and plant. In its adult state it becomes unfit for use, being remarkably acrid; and is only esculent in its first stage of growth, a circumstance which applies to many other plants, in their progress to maturity; but the asparagus is the chief article used in this way. Along with its mucilage, it frequently contains some sweetness; a proof that it is manifestly nutritive, at least more so than the other herbs. From its peculiar smell, it seems to possess some active parts, to which its diuretic quality is owing; and these active parts are entirely distinct from its nutritious matter. It is from these parts that the urine of those who eat it becomes so soon affected with a peculiar odour, which did not appear in the plant before being taken into the body. From this account, asparagus is well suited to weak stomachs; and, in using it, only a portion of the upper parts of it are employed, which become, by boiling, very tender, somewhat sweet, and mucilaginous; and they are more salutary and palatable, the younger they are used. Asparagus was a favourite dish with the Emperor Augustus.

Artichoke.

The artichoke is a kind of thistle, and it grows best in those soils where ashes are thrown. The only alimentary part of this acrid plant is the
receptacle

receptacle of the flower, and the portions of that which we pull away from it, in detaching the separate squamæ of the calyx. The whole of this receptacle, even in its recent state, possesses very little acrimony, and by being boiled is rendered perfectly mild. In its boiled state, it is of a tender texture, somewhat sweet and mucilaginous, and therefore tolerably nourishing. Artichokes came early into use in Europe, and were introduced into England in Henry the Eighth's time, at which period they formed a delicacy, as the pine apple does at present. When thus esteemed for their scarceness, wonderful qualities were ascribed to them; hence they were considered as promoting venereal inclinations to a very great degree, and as increasing the flow of semen. In southern climates, they are eat raw, as sallad, with oil and pepper; but this practice is only fit for warm climates. The French and Germans eat not only the heads but also the young stalks, boiled, and seasoned with butter and vinegar. The stalks, first blanched and preserved in honey, are said to possess a pectoral quality; and the leaves have the property of coagulating milk, being generally used for this purpose at Florence. Boiled, also, in white wine whey, they are useful, as well as the juice, against jaundice.

Sorrel.

Sorrel contains an essential salt, similar to the acid of tartar, and which may even serve as a substitute

substitute for it ; hence this herb is termed, in Lombardy, the sour herb. It is much used by the French, as a sallad ; and the expressed juice is considered as a powerful preservative against scurvy. It is much relished by sheep, as a food ; and, from its acidity, is of a cooling nature, proper for allaying thirst, and creating an appetite. But its frequent use has been considered as apt to deprive the teeth of their enamel, though in this it acts only in common with other acids. When used, it is generally as a sallad, raw.

Lettuce.

Lettuce takes its name from the milky juice it contains. Many varieties of this plant are cultivated ; and from two of them a substance similar to the extract of opium can be formed, so that they would seem to possess noxious properties. The garden lettuce, however, is the least acrimonious of the class to which it belongs, and especially when used at the early periods of its growth, at which time it is usually taken ; in this state it is entirely insipid, and hardly discovers any thing sweet or mucilaginous in its juice ; hence it would appear to give little nourishment in this state, though its nourishing quality is improved by boiling. From its insipid nature, it is little relished, but with the addition of other herbs, in the form of a sallad ; and along with this addition a proportion of egg, oil, and sugar, is generally used ; the best part
of

of which is the sugar, to decompose the other articles. When used by itself, the lettuce, from its acescent and refrigerant quality, is reckoned best in the evening, and condiment should be always joined with it.

Lettuce was famous for the cure of the Emperor Augustus, and formed the opiate of Galen in his old age.

Endive.

Endive makes frequently a part of our food; it is a bitter, wholesome vegetable, though it affords but little nourishment. Before it can be used, its peculiar acrid juice must be removed by blanching, which is chiefly done by depriving it of light. To avoid its acrimony, it is also chiefly used when young, when it is cooling, acescent, and somewhat flatulent; but when old, these qualities of it decrease, but its acrimony becomes more considerable.

Succory.

The succory much resembles the endive, both in its acrimony and qualities, and is made fit for use by the same operation of blanching.

The dandelion is also a species of wild succory, which is made use of in the same stage of its growth, and also undergoes the same mode of preparation.

Purslane.

Purslane yields a watery, sharp, and somewhat saline juice; it is easily digested, and when
eaten

eaten to excess, proves laxative. It is particularly relished by swine.

Cresses.

Cresses are of two kinds---the garden and water cress; they are both acrid, but not of a poisonous nature. The garden cress is one of the earliest vegetables; it has a sharp and somewhat bitter taste. Hence by its operating in some degree as an aromatic, it promotes digestion. It has also been found very useful in scurvy. The water cress has the same pungent, bitter taste as the garden one, and volatile alkali is obtained from it. It is likewise used, as well as the garden cress, against scurvy. It is commonly eaten raw, as a sallad, and is more tender and in better condition in winter than at any other time. By boiling, its aromatic and other properties are destroyed.



Chervil.

The leaves of this plant much resembles those of parsley. It possesses a good taste and smell, and is a very common ingredient in broth; in other respects it discovers no particular qualities.

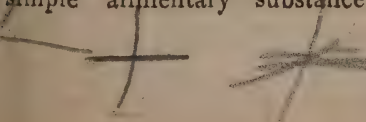
Colewort and Cabbage.

The different species and varieties of this class are considerable, and in all of them the alimentary qualities appear to be very much the same, though they may differ in the proportion of these

qualities

qualities which they severally afford. They are seldom chosen from the quantity of nourishment they contain, but rather from the tenderness of their texture, and the fulness and sweetness of their juice; while the bulk also to which they can be brought, and the facility with which they can be reared and preserved are important objects to those employed in their cultivation. For tenderness of texture the caulliflower and broccoli are the species to be preferred, particularly the young sprigs of caulliflower. Of the kinds where the leaves only are employed, the savoy is of a sweeter and more tender texture than the others, particularly the central and upper leaves of it.

The cabbage is again divided into two kinds the white and red, they are both of a pretty firm texture, they contain a fermentable juice which makes them very liable to run into putrefaction, and they are noted for producing flatulence in the bowels. As young cabbages are less firm in their texture, so they possess all these hurtful qualities in a less degree; and in the use of all cabbages they require much boiling, both to soften their texture, and to extricate the air they contain. Indeed by long boiling, they may be rendered as safe as any other vegetable, a circumstance in which cooks are deficient. The red cabbage is more commonly preferred for pickling, or as a condiment, than used for a simple alimentary substance, though when
dressed



dressed in the common form by boiling, it is sweeter and more tender than the white kind.

Saur Kraut, or Fermented Cabbage.

Besides boiling, a method of preparing cabbage in order to extricate its air is by subjecting it to fermentation according to the German method named *sauer kraut*. For this purpose white cabbage is sliced, or cut in thin shreds, and afterwards seasoned with carraway seeds, and salted. By this means it becomes easier digested, as a natural consequence of the mixture of salt with it, and of the previous fermentation it is made to undergo, by which means much of its fixed air is expelled.

Sauer kraut, then, consists simply of cabbage fermented with vinegar, having the addition of aromatic seeds and salt to it. In this state it will keep more than eight months without spoiling, though cabbage is distinguished by its strong tendency to putrefaction more than any other vegetable, and by giving out under this condition a smell resembling animal matter. Sauer kraut is much esteemed as one of the best preventatives against scurvy. It is recommended for this purpose by the first writers and physicians, and these effects of it have been particularly extolled by the celebrated Captain Cook; nor are its preventative qualities less evident against a variety of other diseases, as against scurvy.

The

The white cabbage is preserved all winter in many places, by burying it when full grown in autumn. Cabbages were much esteemed by the ancients, and the red kind were supposed to have particular virtues in complaints of the breast. The Indians are said to have paid the same divine respect to this vegetable, that the Egyptians did to the leeks and onions. Formerly there were a much greater variety of this vegetable than at present, many of the kinds having been disused. On the whole, cabbage may be said to afford but little nourishment, and that of a watery nature, while on the other hand, it is always apt to produce flatulence, and to be somewhat hard of digestion, and not unfrequently to produce choleric.

FRUITS.

Are the last order of vegetable substances that form a part of diet. In their general qualities they are cooling and ascenscent; they stimulate the stomach and increase appetite; and when carried into the sanguiferous system, they prove refrigerant, diminish the pulse, and obviate the tendency to putrefaction. Hence they are most useful in a warm climate and in the heat of summer, and nature then shows an instinct for them. From the same qualities, they are properly employed in fevers, and wherever there prevails a strong disposition to inflammation. They have been

been considered also as solvent, and are therefore properly employed to attenuate that viscid state of the fluids which excessive heat produces; and to correct that vitiated bilious secretion, so generally experienced in too warm a temperature. But these beneficial effects appear the reverse in certain weak states of constitution, and particularly where the stomach and bowels are delicate, and are apt to generate a viscid slime, or other impurities. In such cases, they have been known to produce stomach complaints and a atonic gout. They are therefore to be used with caution in such habits. This effect is also increased by their being always united with a greater or less proportion of sugar, which naturally produces fermentation, and extrication of the carbonic acid. The same consequences are apt to arise in any constitution where fruits are eat to excess and uneasiness of stomach, and diarrhoea naturally ensue. Where these latter symptoms are mild, fruit has been considered frequently as having a salutary effect. What change fruit can produce on the general state of the fluids, is uncertain; for one disease, however, in which every part of the system acquires a strong putrescent disposition the use of fruit forms the leading means of cure. All fruits at first possess, more or less of an acerb taste; this changes as their succulency advances to a greater acidity, and this acidity is more or less diminished by the increase and evolution of their sweetness. During this progress, a change
takes

takes place in the texture of the fruit in the same proportion. The firmness and density of its structure gradually becomes more soft and tender, and passes into the pulpy state, and this pulp continues to increase to their maturity, while the external cortical portion is constantly lessening. From the difference, then, in the nature of fruit, or as these changes become more or less complete, the various effects arising from their use may be explained. The acid and astringent kinds, though hurtful to weak stomachs, may be eat at times by the healthy and young, without much inconvenience. In hot constitutions they will be generally found to agree, but in those of weak constitution, where the fluids are languid, they be found always attended with the morbid consequences formerly described; and it should be laid down as a general rule, that however powerful the gastric liquor may be, unripe fruit can never be safely taken by any constitution. The nourishment derived from fruit of any kind, it is well known, depends entirely on the quantity of sugar, or saccharine matter it contains. The evolution of this saccharine matter, either takes place naturally by heat when it arrives at maturity, or where it is not allowed to take place naturally, it may be brought about often artificially, either by *keeping the fruit* when a certain fermentation, called *Sweating*, takes place, destroying its acidity; or by the application of *heat* to it, in the operations of *cookery*.

cookery. Fruit, therefore, preserved with sugar, is highly nourishing and antiseptic, but not so soluble in the stomach, as the green fruit. Fruit preserved with sugar and spices is of a heating and drying nature.

To render the use of fruit safe, the tendency which it possesses of promoting fermentation in the stomach should be counteracted, wherever it is of a juicy or watery nature, by the use of wine along with it; or it should be used in a prepared state, when its fermentative tendency is corrected by boiling or drying it; for baking, by the extrication of the carbonic acid from the paste, renders it more flatulent and indigestible.

After these remarks on the general qualities of fruit, we shall enter upon the examination of the first kind of them, or the stone fruit.

Stone Fruit.

The stone fruits are in general of a soft, lax texture, and their juices diluent and watery, in consequence of which, they are readily soluble in the stomach. They possess also a larger proportion of acid, with respect to their sugar, than any other fruits. Hence they are more ready to pass into a noxious fermentation, and to produce in a greater degree all the bad consequences which are apt to arise from fruit; while, from their easy solution, they are apt to be taken by most people in considerable quantities.

Cherries.

Cherries.

Cherries are originally natives of Asia, and were first brought to Rome by Lucullus, from whence they spread over the rest of Europe. The juice of all the varieties of the cherry is palatable, and contains some degree of nourishment, but the pulpy part, and particularly the skins, are very heavy and indigestible. The softer and least fleshy the pulp the wholesomer is the fruit. Cherries should, however, be eaten sparingly from their excess of acid, which even in the sweetest species of this fruit proves hurtful to the stomach, and extends its effects to the bowels. In putrid habits cherries may no doubt be indulged in, as they will naturally tend to correct the principle of putrefaction; and they have been found useful, therefore, in scurvy, and a similar state of body; and in using them for this purpose, they should be taken alone, or when the stomach is empty, and free from any other nourishment. Of all the kinds, the common cherry is reckoned the most dangerous, from its strong tendency to fermentation; the Spanish cherry, though the most difficult to digest, contains the greatest quantity of nourishment. In the use of this fruit great caution should be had not to swallow the stones, as these stones accumulating in the stomach and bowels, have on many occasions formed the foundation

dation of the most alarming obstructions, which have even terminated in death.

Plumbs.

The varieties of this fruit are almost innumerable, and vary in their color, form, size, and taste. The best are those that have a tender fine skin, and have a sweet agreeable taste. When perfectly ripe they are considerably nutritive; but they are liable to ferment in the stomach, in a still greater degree than the cherry. The dried fruit of that species termed the French prune, is a little laxative, and of great service in costive habits, besides affording a pleasant nourishing food; the tendency of which to produce flatulence, should be counteracted by not allowing them to mix with any other aliment, and therefore they should be taken on an empty stomach, or as the last meal. The larger sort of plumbs as being seldom perfectly ripe, are more dangerous than the small ones. Plumbs dried in an oven are distinguished by the general name of prunes.

Peach.

The peach is a fruit highly relished for the excellence of its taste, and it abounds with juice, though it is not very nourishing. Peaches are best in their fresh state, and their qualities become injured in whatever way they are preserved, for they become hard by all artificial preparation. The

The best peaches are distinguished by the delicacy, and thinness of their skin; and its easy separation from their pulpy part. They should likewise be little covered with down, for in proportion to the thickness of it, their quality is inferior. Their size also should be moderate, and not too small nor too large. They should possess a delicate melting pulp, not adhering to the stone, and the colour of the pulp is generally determined by that of the exterior skin. The kernel of the peach is a strong and wholesome bitter, possessing something of an astringent property.

Apricots.

The apricot, like the cherry and peach, was first brought from Asia to Rome, and thence spread over Europe, and it is a sweeter, richer, and less noxious fruit than either of the former. Apricots should be fully ripe before being used, in which state they are less apt to produce fermentation, and being of a cooling, antiseptic nature, they may be more indulged in than the other kinds. Preserved apricots are highly nourishing, but are less digestible than the fresh.

APPLE SPECIES OF FRUIT.

The second kind of fruit that falls to be noticed, is that of the apple kind. It is not so dilute and watery as the stone fruit. It possesses also a less active acid, and consequently is

less apt to noxious fermentation. It is also of a firmer texture, which renders it longer retained in the stomach, and thus a morbid acidity becomes induced by it. Apples also are firmer and less soluble than pears, that is when both kinds are taken fully ripe. Pears also are specifically heavier than water, and fall in the bottom of the stomach, where they are subject to its prestalic motion and become sooner digested. Apples being lighter, swim on the surface, elude the action of the organ, and irritating its upper part, produce uneasy symptoms. Pears also possess more sweetness than apples, and are therefore in proportion more nourishing. Both kinds, viz. pears and apples, when fully ripened, possess both the good and bad qualities we have stated as belonging to fruit in general.

Apples.

Of this fruit there are many varieties, and they have been divided into the aromatic, the tart, and the watery kinds. Of the aromatic kind the rennet are the best, and possess the most delicate flavour; they contain also little of the watery parts, and are little liable to flatulence. Wherever they are hard and difficult of digestion, these effects are done away by stewing them, when they are rendered more wholesome and soluble. Apple jelly, made of the acid kinds, is a cooling and wholesome preserve.

Pears.

Pears.

Of pears there are more than one hundred varieties. They are more wholesome than apples, yet to some stomachs they prove cold and occasion flatulence; they are also, in proportion to their hardness, indigestible; hence the baked fruit is much more wholesome than the raw.

The kernels or seeds of both apples and pears are of a bitter aromatic nature, and tends somewhat to correct the noxious qualities of the fruit itself; in this view they should be eaten with it, a precaution which will apply also to the kernels of the stone fruit, which should not be thrown away.

These fruits are properly formed into pies, as the addition of butter used in this form of food, counteracts in some degree the fermentation of the fruit.

Medlar.

Medlars are a species of apple, the fruit of which is rough and astringent. It is not eatable till it begins to decay, at which period it seems to undergo something of a vinous fermentation, and in consequence of this it acquires a rich and pungent flavour, highly grateful to the taste of many in this state; it is also not an unwholesome fruit.

Quince.

Of this fruit two species exist, termed the apple and pear quince, and the best of the latter come from Portugal. Their pulp turns to a fine purple when stewed or baked, and it is much softer and less austere than the others. In its crude state the quince is not eatable. An elegant sweetmeat or marmalade is prepared from it, by baking it with a proper quantity of sugar. It is a fruit highly antiseptic, and along with its acid it contains much mucilage. Its pulp, like that of most fruits, is somewhat difficult of digestion, but it is generally eat with sugar. It has been recommended in dysentery as a useful medicine from its quantity of mucilage.

Pine Apples.

This fruit on account of the delicate poignancy of its juice, has received the general appellation of the king of fruits. They are originally a production of the East Indies. In this country they generally ripen from the beginning of July till September, and we judge of their maturity by the strong smell they emit, like that of ripe fruit, and by gently pressing the protuberances of the fruit by the thumb and finger, when if they give way it is a certain sign of a ripeness. This fruit does not keep above three or four days if suffered to remain on the plant before its flavour is lost, and when cut it should not be above twenty-four hours

hours before it is eat. It is reckoned a powerful cordial, and also to possess exhilarating effects; yet, however agreeable its taste, and fragrant its odour, its poignant acid juice is found to disagree with many, and it has been deemed particularly hurtful to pregnant women.

Karatas.

Karatas are a species of the same fruit possessing greater acidity, and therefore only capable of being used in small quantities. In the West Indies their sharp juice is diluted with water, and is used as a powerful cooling remedy in fevers.

Orange.

The orange is of two kinds the China and the Seville. The China orange, from its sweetness, possesses a nourishing quality, while from its acidity it is liable to all the inconveniences that attend the use of stone fruit. It is however exceedingly pleasant and cooling. It is powerfully antiscorbutic and is highly useful in fevers, particularly those which discover a bilious or putrescent tendency.

The juice of the seville orange is on the contrary rough, sour, and somewhat bitter. It is not near so palatable, but more stomachic than the China orange. It is also more an antiseptic, and therefore, preferable to the other in the cases of disease mentioned above. To

give the orange its proper degree of flavor, it requires to be exalted by a very warm sun. The oranges, therefore, brought to this country from the southern parts of Europe, are deficient in this respect. Where occasionally brought from the West Indies, or a climate of that increased temperature, they discover a richness of flavor far exceeding the productions brought to this country.

LEMON.

This fruit is particularly distinguished by its peculiar acid called the citric acid. Diluted with water and sweetened with sugar, it is used to allay thirst in fever, and to obviate putrescency in the different putrid diseases. The acid of lemon is a known antidote against narcotic vegetable poisons, and among these in particular against opium. It is also useful against the poison of mushrooms, or the fungous tribe. It corrects and gives a relish to various kinds of animal food, as veal, pork, and different kinds of fish. and in some cases it is an antidote to the poison of shell fish.

The lime is a smaller species of lemon, differing little from it in quality, except in its greater proportion of juice.

Besides the pulpy part of these fruits we have described, containing their juice, the rind, consisting internally of a tasteless part, and externally of a more aromatic one, deserves equal attention. In all these fruits the
external

external rind contains an essential oil, of an astringent heating quality, forming an agreeable aromatic; and in cold constitutions being a highly useful stomachic. The orange peel is warmer than that of the lemon, and also less perishable; and of the oranges again, the rind of the seville orange is more aromatic than that of the China one.

CITRIC ACID, OR JUICE OF BOTH FRUITS.

On the juice of those fruits we may observe, that the juice of the lemon, is one of the most powerful vegetable acids, and one of the most useful in every case where vegetable acids are proper. The juice of the orange again contains a much milder acid, but equally salutary with that of the lemon. To enumerate all their good effects, it is only necessary to observe, that wherever the stimulus of a mild acid is wanted to invigorate the appetite and encourage digestion, they are the most proper; and besides their influence over different states of disease, as already noticed, their peculiar power of counteracting the noxious effects of opium deserves particular attention. Thus it has been recommended by some writers that with every dose of opium, a proportion of its juice in the quantity of two ounces to the grain of opium should be taken, by which means the uneasiness which opium often communicates will be prevented, its depressing consequences avoided, and the tendency to constipation obvi-

ated, which it is always apt to produce. It is to this powerful use of vegetable acids is ascribed the slight effect which opium possesses over the Eastern nations, and not to the influence of coffee as commonly alleged. As this fruit is the production of a warm climate, various methods of preserving its juice or acid entire, have been attempted, and these consist either in evaporating it to a rob, or thick consistence, when it loses part of its flavor or quality, or in its simple expression, and depuration from its sediment, or mucilaginous part, afterwards corking it close up, and this method is the best.

Pomegranate.

The pomegranates are of a cooling nature, particularly their red succulent pulp, and of a pleasant acidity, much like that of the lemon and orange. The sweetest kind of this fruit contains some nourishment, though but small.

SMALL SEEDED FRUITS.

The next division of fruits after the stone, and apple species are the small seeded kinds. They are by far the safest of the summer fruits. Their substance is tender and easily dissolved, so that they pass off before any active fermentation can take place; and this is even less ready to occur in them, for they possess a greater sweetness, and contain a smaller proportion of acid than the former species of fruit.

Currants.

Currants

Are of three kinds, the black, red, and white. The black currant is a cooling, pleasant, sub-acid fruit, the skin, or husk, of which, should always be rejected in using, it being indigestible. Of this fruit a jelly is formed, which is found highly useful in sore throats, and discovers some degree of astringency: the red and white species of this fruit differ nothing from the black, unless in containing no astringency, and therefore, their jelly is more used as an alimentary article. From the small size of the currant the berry cannot be eat without the husk, which is the only objection to this fruit, for though it has very little sweetness, yet it is considerably dilute, and very pulpy, when kept clear of the acerbity of its covering.

Gooseberries.

The gooseberry is a cooling palatable fruit, though when eaten to excess, it gripes and proves laxative. As it is larger than the currant, it can be easily eat without the indigestible part, the husk which can be always separated, and as it contains naturally a large proportion of sugar or is of a sweet nature; it is a much safer fruit for use. Like all fruits containing a mild acid, it creates an appetite, and proves of a cooling nature. Of this species of fruit there is a greater variety than of most others,

and it differs much in color, size, and sweetness. When used in a green state for sauces, and pies, it is cooling, and forms a proper counterpart to animal food.

Strawberries.

The strawberry is a fragrant, cooling, and wholesome fruit. It is highly tender, and easily digested. Though taken in large quantity, strawberries seldom disagree. They impart a violet smell to the urine. They are laxative in a certain degree, and promote indeed all the evacuations.

Those laboring under gout and gravel, it is said have been relieved by them, and Hoffman has found them useful in consumption. A variety of species of them prevail in modern gardening, but the wild, or natural kind, posses still the highest degree of flavor. On what grounds they are alledged to be so efficacious against the gout and gravel, we cannot perceive; but were it established, it is clear, a remedy so innocent and plentiful, would surely not be neglected. The accumulation of the seeds of this fruit in the bowels, and producing constipation, may be considered as barely probable, from the short time, during which this fruit is in season to be eaten. Strawberries are used in different ways; they are either eat with water and sugar, which is perhaps the most wholesome method, or they are eat with wine, the strength of which distroys their flavor as well as heats too much, or, they
are

are eat with milk and cream, which both renders them more agreeable, and also lessens the activity of their acid in the stomach.

Raspberries

Are an agreeable, cooling, and wholesome fruit and they are of two kinds, the white and red; both kinds are of a refreshing taste and smell, and somewhat bigger than the strawberries. This fruit is much infested with grubs, and different insects; which should be carefully picked out as they are apt to produce mischief when swallowed. This circumstance, also, renders them sooner liable to putrefaction than most other fruits, they are of a vinous nature, highly cordial, affording much refreshment, and allaying thirst.

Hips.

The hip is chiefly used as a sweetmeat, or in a preserved state, but has nothing very particular to recommend it.

Grape.

The varieties of this fruit, are exceedingly numerous. Those however, of a sweet taste and aromatic flavor ought only to be eaten. They are cooling, antiseptic, and nutritious; and when eaten in quantity, they prove diuretic, and gently laxative. To have these effects they should be eaten on an empty stomach, or in the morning; and they should be always taken without

the skin, or husks, and also without the seeds, or stones, which are both highly indigestible.

When taken in this way they are the safest, and most nutritious of summer fruits. The quality of grapes depends much on the specific nature of the kind of grape, on the climate, or soil, and on the different degrees of maturation the grape is allowed to receive. From this variety in the nature of the fruit, it is found highly useful in a number of diseases, and it has been found especially so in dysentery, in consumption, and in bilious and putrid fevers.

Mulberries.

This fruit has a pleasant, salubrious taste, and contains a mucilaginous and nourishing juice. It is also cooling and laxative, but if eaten too freely it is apt to produce looseness. There are two sorts of the mulberry, the white and the black though the latter only is used.

SMALL BERRIES.

After these fruits may be mentioned the small berries, viz. the bilberry, the cranberry, and red whortleberry, they contain all a good deal of pleasant acidity, accompanied with some degree of astringency. Of the three the cranberry is the best, and it is softer in its preserved state, than in its recent one. Baked with a proper quantity of sugar it makes an agreeable sweetmeat. The bilberry is generally employed for red-

reddening white wines with the help of a little alum, and in order to give them a little roughness, so as to pass for red wine. This practice is employed in many-parts of the continent.

DRIED FRUITS.

Many of the fruits we have enumerated are used very much in a dried state, by which they acquire qualities somewhat different from what we have described; for thus their watery portion, as well as their acid and air, is in part dissipated, which improves their value, and gives their qualities a more concentrated form.

Prunes.

Prunes retain much of their original acid, and are therefore of a more laxative nature than the other dried fruits. This quality is common to all saccharine matters, and in fruits depends on the conjunction of their acid with the bile.

Raisins.

Raisins contain a large proportion of pure sugar, and hence they are greatly nutritive, which quality bears a proportion to their quantity of sugar. Of this fruit there is great variety: the blueish raisin from Marseilles is reckoned the best of the large kind; the light brown Spanish raisin is reckoned the worst of the species.

Dates.

Dates.

The date is a fruit highly nutritive, and forms the chief food of some nations. The ripe fruit, when fresh, abounds in a sweet mucilaginous juice; the dried fruit is less so. The unripe fruit is found a fattening food for all animals. Besides their nutritious quality, they seem to possess no farther peculiarities.

Figs.

Dried figs are distinguished in a special manner by the large proportion of sugar they contain; they are also reckoned easier to digest than any other of the sweet fruits, and their sugar seems united with a large portion of mucilage, which increases their nutritious quality. From their mucilage, also, they become useful as demulcents, in many diseases where an acrimony prevails, particularly in pectoral complaints and cases of gravel. The best figs come from Turkey. They are also brought from the south of France, where the fruit being dipped in a scalding hot lye of ashes made of the twigs, are dried in the sun, and thus they afterwards stick together. Hence they excite to stool without griping. Figs have been supposed to breed lice; but this seems an erroneous opinion, arising from the common people in fig countries living so much upon this food.

GENERAL REMARKS ON THE USE OF FRUIT.

Having detailed the chief varieties of fruit used as aliment, it remains to make some farther observations on the time and form of using them.

It has been often questioned at what time fruit should be properly eaten---whether before or after a meal, particularly after dinner. When the health is good, and the stomach sound, it is certainly a matter of little consequence; and employed before dinner, it will somewhat blunt the appetite, and thus limit the proportion taken of other foods. To those in a hectic or irregular feverish state, fruit will be best used at such particular times as these feverish heats are greatest, which is commonly in the morning and evening. Thus iced fruits have been found highly serviceable to hectic patients, though too cold in this form for most others. The proper rule, however, on this point is to be entirely regulated by the state of the stomach. If the stomach is weak, relaxed, and irritable, the bad effects of fruit upon it will be equally noxious upon it when empty as when full. Where the stomach, again, is strong and active, fruit may be eaten at all times without inconvenience; and in weak stomachs, even when full, if fruit is taken to excess, it is apt to be hurtful, by inducing a powerful fermentation of its contents. The rule of the ancients

cients may here, perhaps, be properly adopted--- that the mild fruits should be taken before, and the more acerb ones after meals, as giving vigour to the organ, and as promoting digestion. The use of fruit, however, after meals, is in general the safest, and most common practice; and where much animal food is employed at meals, fruit is a proper addition to the repast. Before meals, the dried fruit is always safer than the recent fruit, and particularly in weak stomachs.

The changes employed on fruits by their preparation before using them, deserve also to be noticed. Wherever heat is employed, as in boiling, stewing, or roasting of fruits, their qualities become altered, by dissipating part of their acid, and consequently by disposing them less afterwards to fermentation. This is particularly useful in the acerb fruits, where an acid, austere quality exceeds. Besides the application of heat, the qualities of fruit we find very much altered by mixture, and that with matters which counteract somewhat their tendency to fermentation, or blunt the activity of their acid. Thus the addition of milk or cream to fruit is attended with good effects in this respect. It is a practice peculiar to Britain, and by the oily nature of the cream the acid of the fruit becomes so involved, as considerably to lessen the disposition to acescency the stomach. In the same way wine obviates the inconveniencies attending the use of fruit, by its spirituous part checking fermentation.

The

The wine used therefore for this purpose should be strong, ripe, and mellow; and in these respects, Madeira is perhaps the best. Spirit itself, if it could be safely used, would even be preferable. Sugar is also an addition frequently made to fruit; and by this addition, though the tendency to fermentation is perhaps not checked, yet the nourishing quality of acid fruits is increased by it, and their excess of acid is in some degree blunted, so that they become equally safe with the sweetest fruits we employ.

PARTICULAR FARINACEOUS FRUITS.

To close the subject of fruit, it remains to notice certain articles, which, though belonging to this class, instead of unfolding by their maturity an excess of saccharine principle, as other fruits, discover, on the contrary, more of a farinaceous nature, resembling in this respect the grains and seeds.

Cucumber.

The cucumber is commonly employed in its unripe state, and is in that condition not very nutritive. It discovers a bland, insipid juice, of a watery, mucilaginous nature, without acidity or sweetness; but as it ripens, its substance approaches

approaches more to a farinaceous matter. It is much employed in diet by the common people, a proof that it is more nutritive than imagined; but by the higher ranks it is only used as a condiment to accompany animal food. In its green state, it affords no nourishment, and is considerably acescent. Even when ripe, it is apt to run into the acetous fermentation, and to produce flatulence and cholic. This may be attributed in part to the firmness of its texture, in consequence of which it has been known to lie on the stomach unchanged for forty-eight hours. Hence, from its coldness and difficult digestion, all nations have concurred in joining oil, vinegar, and aromatics, or condiment, to this kind of food---no doubt from experience of their checking its disposition to ferment and become flatulent---though even with these additions it produces disagreeable eructations on many stomachs. Another condiment has been lately introduced to correct the noxious effects of this fruit, viz. a part of its own rind; but the acrimony of this in its mature state is too great, and it should only be employed for such a purpose when very young. The best form of using cucumbers is either stewed or pickled. When stewed, they afford a light wholesome nourishment, which has been recommended in consumptive cases; and when pickled, they form an agreeable and powerful antiseptic.

Melon.

Of the melon there are many varieties, differing from each other in the firmness and sapidity of their texture, as well as in the sweetness of their taste. From the saccharine nature of the fruit it cannot fail to be nourishing, but from the firmness of its texture it is somewhat indigestible, and is apt to run into the acetous fermentation, so that moderation is necessary in its use. Being more aromatic than the cucumber, it is consequently more wholesome; and of its kinds the muskmelon, being most aromatic, is the best. In its use, to render it safe, it requires the addition of aromatics and sugar. It has been alledged to be powerfully diuretic, but this is a quality only common to it with other watery vegetables.

Gourd.

The gourd resembles the melon, though inferior in sweetness and much larger in size. It is only used boiled, and is therefore easier digested. It should be first boiled in water, then the liquor should be strained off; when it should be stewed in milk, with the addition of salt and other condiment. In this state it forms a wholesome and nutritious food.

Pompion.

The pompion, as well as the gourd, is only used boiled. It nearly resembles the gourd. By some

some people it is employed to make bread, in the proportion of one part of it to two parts of wheate meal. This kind of fruit often arrives at a prodigious size; and it is said, in Egypt they are so large that six of them will load a camel.

FUNGIOUS ALIMENT---OR THE MUSHROOM KIND

It is doubtful to which class the food afforded by the *esculent fungi* belongs, or whether it is to be considered of an animal or vegetable nature. We have therefore placed it the last in the arrangement, from its partaking somewhat both of the one nature and of the other. If, indeed, the fungous productions are of a vegetable kind, they are certainly very different from any other vegetable matter with which we are acquainted, as they yield nothing but volatile alkali, the proper animal product on distillation; and when exposed to fermentation, they follow the course of animal substances, by running directly to putrefaction. Nor do they shew any tendency to obviate putrescency in animal substances, which all other vegetables do. For these reasons, though their origin marks them vegetable productions, their nature holds this uncertain.

The esculent productions of this class are divided into three heads, under the names of *truffle*, *morel*, and *mushroom*.

Truffle.

Truffle.

This substance is equally singular in its qualities and vegetation. It consists of a solitary bulb, which shoots in the earth, and neither seeds nor rises above ground. It is seldom found in Britain. On distillation it yields volatile alkali and no acid. Hence its degree of nourishment, and its stimulus on the system, are superior to what vegetables afford, nor does it shew any of the flatulent tendency of vegetable productions. It is also the only vegetable really possessed of aphrodisiac virtues. It is much safer than the mushroom; it is never found to display the noxious quality of the latter, but from its firmer texture, it is alledged to be more indigestible and slower of solution.

Morel.

The morel is a kind of spring mushroom, as large as a nut, oblong, shrivelled, tender, porous and cavernous, like the honeycomb, of a yellowish white colour, or inclining to red, sometimes blackish. It is less dangerous than the common mushroom. It is met with in moist grassy fields, in woods, and on the roots of trees. In qualities it approaches to the truffle, but is used more as a fashionable ornament to dishes than as proper food.

Mushrooms.

Mushrooms are of two kinds---the esculent and deleterious---but it is often difficult to know their distinction from appearance, and their use therefore, at all times becomes somewhat unsafe.

Esculent Mushrooms.

The esculent kind have been distinguished into a variety of species; but the true edible mushroom, by the French named *champignon*, is known by its external whiteness, and by being when young of a pale red within, and of a deeper red when older. At its first appearance it is of a round figure, and not much larger than a small nut; after it has a little unfolded its membranes they appear red, full, and close; on the top is disagreeable softness, equal and white; the matter within is very white, with short and thick stalks.

On the appearance of mushrooms, it may be remarked in general, that most of them are safe with firm fleshy caps, and much depend on two circumstances---the *dryness of the soil* and the *time* at which they are used.

With respect to the first---all moist soils render mushrooms a dangerous food, from the noxious impregnations they are apt to receive in consequence of being nourished by the stagnant fluids and vapours that prevail there. Hence those who are employed to gather mushrooms should

should particularly attend to the places from whence they are taken.

In regard to the time of using them---they should be gathered for eating as soon after springing up as possible, for when old their texture becomes more indigestible, and their juices acquire an acrimony. Hence those reared artificially on hot-beds are to be preferred, as safest, from the time of their growth or first appearance being easily known.

Mushrooms are clearly a rich alkalescent food, and they may be indulged in by persons of strong stomachs. They are used either roasted, stewed, or as ketchup; but in whatever way they are prepared, they require much seasoning to render them pleasant, or extract their flavor; even the best of the esculent kind, when old, should be avoided. Pickled or salted mushrooms are tough and indigestible, and they are best used in their fresh state.

Poisonous Mushrooms.

A particular deleterious kind of mushroom, termed the *moncho-more*, is used by the Russians, being first immersed in a fermented liquor; and, thus prepared, it is taken to produce intoxication, which is attended with the most violent and outrageous fever, and always ends in assassination.

Morbid

Morbid Effects from Mushrooms.

Where mushrooms prove deleterious, the first sensations they produce are qualmishness, which soon increases to violent sickness, this is succeeded by giddiness, a palpitation of the heart, and flushing heat of the skin; with more or less redness of it. Swelling of the face also ensues, and sometimes a sensation all over the body, as if a general fullness or swelling prevailed. The patient stares in an unusual manner. All objects appear different from what they did before, a difficulty of breathing ensues, and the mind is strangely confused. Delirium, and convulsions have been also known as frequent consequences of this attack. In other cases where the symptoms are mild, and do not appear for a good many hours after eating them, the sickness ends in *cholera morbus*, on the termination of which, the patient generally falls into a sound sleep, or a somewhat comatose state.

To relieve these symptoms as speedily as possible, the clearing the stomach of its noxious contents should be the first step; and the best emetic for this purpose is ten grains of the vitriolated zinc, which may even be repeated if the sickness does not abate. The emetic is then to be succeeded by the vegetable acids, which should be given in pretty considerable quantity, either in the form of vinegar or lemon juice.

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These will be found an antidote against what remains of the poison.

Preventative Treatment.

To prevent such dangerous consequences resulting from the use of this food, there should always be an interval between the gathering and eating of mushrooms. During this period they should be first soaked in cold water, and then blanched in fresh water. In using them also vegetable acids should be joined with them, and much attention should be paid, in chewing them, to their being minutely divided.

OF DRINK IN GENERAL.

AS the waste of the thinner, and more watery parts of the body is much greater than of the solid, or more consistent ones; so besides food, which we have hitherto treated, man requires a copious, and ready formed supply of a similar watery fluid, correspondent to this waste, which supply in common language is termed *drink*. The great, and properly the sole intention, then, of all drink, is to introduce into the system a sufficient supply of liquid; and the necessity for this supply, as well as its quantity, are both pointed out by a certain feeling which the want of it excites, named *thirst*. From the purpose, that drink is naturally designed to serve, the liquid composing it, should be of the simplest and most diluent kind. Hence water is the drink of all animals, and also of man in his natural state; but along with refinement this part of aliment as well as food, has changed the simplicity of its nature. It has become impregnated with a variety of foreign matters, which along with dilution introduce into the body, a proportion of nourishment, or stimulate the system; or in fine produce both these effects, and

and thus, instead of answering the original intention of nature, as a pure elementary fluid, in allaying thirst, it is formed only to please the palate frequently at the expence of that sensation, and to create a desire for the enjoyment of it, beyond what either nature or reason approve.

Drinking, or rather *dilution* which is a term that more properly applies to this part of the subject, we find indisputably necessary to the support of animal life. By it alone, life can be maintained for a certain time without food, a proof that it is even more essential than food itself. The use of it, however, like that of food, requires certain regulations, and we are more apt to exceed in the proportion of drink than of food. There are many people, however, who are known never to drink at meals, the time when dilution is perhaps, most necessary, and even rarely to do it on any other occasion. This is a practice by no means to be commended; but the other extreme, which is so common, should be equally avoided, from weakening too much the activity of the digestive organs. Drink, besides the supply of fluid to the system at large, in the first instance materially promotes the solution of the food, and expedites its passage from the stomach, and its conversion into chyle. It then assists the union of this part with the other animal fluids already formed, and by giving fullness and tension increases the activity of the general circulation, thus it promotes the formation of blood, and gives

gives vigor and a supply to the different secretions.

By it, also, the consequences of obstruction are prevented; the thickening and incrassation of the blood, which naturally arises from the action of the solids upon it, are counteracted; and the tendency of the fluids themselves to generate acrimony by their stay in the body, and their influence one on another, is obviated in a great degree. Hence water, as the basis of equi drink, deserves the title of an universal remedy more than any other substance with which we are acquainted.

From this view then, how to employ or use drink properly is a subject of the first importance, and in our conduct respecting it, we must be directed by the several circumstances of the nature of our food, of the state of the season, and of our mode of life; while even the particular time also of using it, in regard to meals, as well as those restrictions specified, merit an equal share of attention.

On the nature of our food, we may take notice, that the drier it is, either from its quality or form, the greater the proportion of drink it requires. Animal food demands of course a greater quantity of drink than vegetable food. But in all cases the drink should exceed the proportion of food. This some authors have endeavored to limit, by stating that the proportion of liquid should be double to the proportion

portion of our dry aliment; but this will never be accurately observed, for every individual will be much regulated by inclination and habit in this respect. One thing, however, is clear that animal food requires a greater proportion of drink than vegetables, and that water is the best beverage to conjoin with vegetable food from its less disposition to produce acescency; while animal food will be better digested by fermented liquors, from their giving that tendency to acidity and fermentation, which animal food in order to its ready solution, demands. In proportion to the form, also, in which animal food is used, should the quantity, and kind of the fermented liquor be regulated. Thus roasted meat demands a greater proportion of it than boiled meat, baked meat still more than roasted meat, and the drink also should be of a more stimulant nature from the greater heaviness or indigestibility of this mode of preparing food. Fish, being more viscid than flesh, stands in need of the same attention to an increased proportion of liquid and that too of a fermented, stimulant nature, so that the common proverb, 'Fish should swim' is well applied. Particular kinds of food also excite thirst in some constitutions, and not in others.

The state of constitution determines a good deal our natural appetite for a large proportion of drink. Thus phlegmatic habits have less inclination to drink, than those of the sanguine,

and choleric temperament. Women also have less calls from thirst than the other sex, and youth, in the same manner, less than manhood or age.

The influence of the season regulates likewise our appetite in a material degree. Excessive heat calls for a large supply of liquid, by increasing the dissolution or waste, - of the thinner parts of the body ; and it suspends also in some measure the activity of the gastric secretion, as the desire for solid food becomes considerably diminished. Thus the inhabitants of warm climates eat little in proportion to those of the colder regions ; but they require a constant supply of liquid, and their desire for this knows no bounds. On the other extreme the natives of a cold country possess a keenness of appetite, and strong desire for solid food ; which, unless very dry and compact, seldom excites much inclination for liquids. Hence it is more from their pleasing the palate, than from the diluent nature, or from real call of thirst, that much consumption of drinks in cold regions takes place.

The way of life, the last circumstance taken notice of, must considerably affect the desire for drink, and that much in the same manner as the influence of the season. Thus the laborious, from their exertions hastening the dissipation of the thinner fluids, require a much larger use of drink than the sedentary and inactive, and according, therefore, to the degree of exercise of the individual at different times,

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will the call for drink be greater, and the necessity also for this encreased supply be proper.

The suitable time for drinking, with respect to meals, is a part of the subject that next falls to be treated.

A desire for drink is generally one of the first calls we have in the morning, and this will be most properly gratified with a glass of cold water, which will give a vigour and tone to the stomach, and prepare it for the approaching meal. It will also tend to remove any viscid phlegm which may be collected upon it, and which may vitiate the appetite for the morning's repast. At first, however, the feeling communicated by this beverage will be disagreeable, but if continued for a few times it will prove a refreshing and agreeable relish.

But drink before a meal has been objected to, by some writers. This, however, like every general maxim must be regulated by circumstances. If the stomach is strong and active, it will do no injury in lessening the appetite. If the stomach, on the contrary, is weak and relaxed, some indulgence of this kind may be proper, in the way of cordial, to excite its languid action, and invigorate it for the approaching reception of food. The same objections have been applied to drinking in the time of meals, and no doubt it is intended by nature that the appetite for food should first be satisfied, before a supply of drink becomes necessary. At the

same time drinking cannot be avoided to a certain degree, and especially in warm weather, when the powers of the stomach feel languid; and the nourishment taken is not sufficiently quick in its operation to remove this. A moderate portion of drink, therefore, may at all times be conjoined with our meals; but it should be chiefly with the view rather of nourishing than repressing appetite, and therefore should be of a stimulent nature, as a glass or two of wine, and it should also be in such small quantities as not to affect materially the distention of the stomach, or prevent the organ from receiving the proportion of nourishment it requires. Hence liquors of an inferior degree, or a diluent nature should be rather used to close the repast, than to interrupt the meal.

Where drink is used at any intermediate time between meals, the propriety of joining it with some solid food has been inculcated by many authors. But thirst and hunger are two different sensations; and the supplying the former, does not necessarily interfere with the latter. In certain cases, indeed, where an immoderate use of stimulent liquors is the consequence of a depraved mode of life, the bad effects of this practice may be somewhat lessened by such a plan of procedure. Drink, however, where left to choice, should only properly succeed a meal, and be called in to assist the progress of digestion. It should consist, therefore, chiefly
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of the most diluent or solvent liquors, and it should be taken only in small quantity, as the exertions of the stomach seem to require its assistance. On the whole, from what has been pointed out, though drink is a necessary and essential part of aliment, it should never be carried too far either in respect to its quality, or proportion. Though not so hurtful as an excess of food, yet its immoderate indulgence weakens the stomach and bowels; retards instead of hastening digestion, and by an improper dilution makes the food pass off too quickly. Hence the mass of blood is thinned by it, from wanting the due proportion and consistence of its parts; and a general debility of the body ensues, distinguished by universal relaxation, and too copious a discharge of the different excretions.

But on the other hand, though it is rare, a rigid abstinence from drink is equally improper. By this error the solution of the food becomes incomplete, and digestion is too much impeded. The blood and other fluids acquire a morbid consistence, becoming thick, viscid, and tenacious, and the several discharges corresponding to this state, are interrupted, or at best imperfectly performed.

In treating this part of our subject, we shall first examine drink in its simplest, and most natural form, and then consider the various changes imparted to it in the progress of refinement.

ment by the hand of art, In this view drink is divided into two kinds, pure water and its various fermented impregnations.

Water.

Pure water may be termed the universal drink of all animals, and is the only liquid taken in by the brute creation in consequence of the appetite of thirst. Hence it is suited in a particular manner to the animal economy, and in the human race those persons have been found the healthiest and longest-lived who have confined themselves solely to this beverage. Water however shows a considerable difference of qualities according to the source from which it is drawn. Pure water, therefore, has been characterized as that which is pellucid to the eye, without taste or smell, of a proper lightness and coldness of temperature, with a slight impregnation of fixed air, but discovering, on chemical examination, no other heterogenous mixture. All water, from whatever source it is taken, may be considered as pure, if answering this description; and even where subjected to chemical test, if it contains less than ten grains of heterogeneous mixture to the pound of fluid, it may be reckoned sufficiently wholesome for the purposes of aliment. A common distinction has been made of water into hard and soft; the former, as containing a portion of earthy matter, is incapable of dissolving soap and of boiling vegetables, while the soft, on
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the contrary, answers these purposes without any apparent difficulty. It has been doubted by some physicians whether these distinctions with regard to water, as a drink, are necessary, and that the alleged bad consequences of hard water are built on no proper foundation. If, however, experience clearly evinces that water is the most healthy and natural beverage of mankind, and that in proportion as it receives various impregnations, it becomes more and more unfit for the salutary intentions of nature; so from the same experience it should be naturally expected that soft water, or water in the purest state, should be the most wholesome, and the most fitted to be introduced into the body. In the choice of water, therefore, a proper nicety should be always shown, and that kind always selected which is freest of adventitious impurity or impregnation. We shall therefore consider the different kinds of water with regard to their relative qualities in this respect.

The first to be noticed is *water congealed by ice*. This if it could be always had is perhaps the purest of any, as the matters with which it may be impregnated are less capable of congelation, and consequently they leave the element in its native state. In the warmer climates it forms one of the greatest luxuries in summer, particularly in Italy and Spain, and a glass of ice water is preferred to the richest impregnation it can receive. From this congealed water, it has been alledged by many authors, that the

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swelling.

swelling of the throat so common in Switzerland takes it rise; but in opposition to this opinion, the disease is not confined to the neighbourhood of the Alps, where this water is chiefly used, but appears also in other parts of the country where a different beverage is employed. The second species of water in regard to its purity is *rain water*, when collected at a distance from the impregnations of a town. It is formed as it were by a natural distillation, and if falling in a high and elevated situation, and at a time of the season, as winter, when the exhalations or vapours are least apt to contaminate it in its descent, it is certainly possessed of a considerable softness and purity.

River water, the next variety, may be considered as a compound of spring and rain water. Near great cities particularly, it is blended with a number of impurities. These, however, may be very much removed by allowing their full deposition, or giving the water time to settle and then passing it through the process of filtration. By this preparation it becomes fitted for every purpose of life, and it is particularly preferred for brewing or forming it into malt liquor. It is also more or less wholesome from the particular strata it flows over, as from a sandy or stony soil it attracts less impurity than from a soft muddy one, and the more rapid its course, the sooner it frees itself of those adventitious particles which taint its natural wholesomeness.

Spring

Spring water, the third kind of it, is a compound of sea water changed by subteraneous heat and of the vapours of the atmosphere. It is indeed impregnated always, more or less, with mineral substances, which not being capable of digestion, must always be noxious in a certain degree. But like the river water, the strata through which it rises, must a good deal regulate its qualities. Most of the spring water throughout the kingdom, particularly in London, contains a portion of lime stone and mineral acid, and hence it has been considered as productive of various diseases, especially in children and invalids. - On this account, before using it, spring water should always be boiled or filtered, and compleatly exposed to the air for some time.

Well, or pump water is much of the same nature with spring water, but it generally receives a fuller or more complete filtration from the manner in which it is procured. Where the filtration is through a sandy soil, the water is purest; and the more frequently a well is emptied, the less chance there is of the water acquiring, by stagnation, a putrid taint; that there may be no danger of this, well water should be filtered a second time before it is used.

Stagnant waters, as those of lakes, swamps, and ditches are the most unwholesome of any, as they both collect impurities from their situation, and acquire from the want of motion a disposition to putresency. Hence stagnant waters are the

the fruitful source of contagion, and they should never be used as a matter of choice, except for the purposes of washing, or where aliment is not concerned. Where their use is unavoidable, they should always be previously boiled and afterwards filtrated in the most gradual manner. When a still higher degree of purity and softness in water is wished for than what these natural and simple methods of preparation admit, it has been proposed to distill it, as the most effectual mode of freeing it of all adventitious admixtures; but in doing this it acquires from the process a disagreeable flavour, which it does not quickly lose.

The temperature of water requires attention as well as its purity. The colder it is the more tonic and invigorating it proves, while warm water is, on the contrary, the most sedative and debilitating of drinks. The utility of water can only be judged of by its use. It is the most powerful solvent of alimentary matter we possess, and without it neither life nor health could be maintained. Nor is its use less powerful in disease; in fine, where custom has not altered the constitution of man, it forms the most salubrious of all drink, and those who have made it their constant and only beverage have enjoyed a constant health, a flow of spirits, and a length of life superior to all others; and in the language of the celebrated Hoffman, of all the productions of nature or art, water comes nearest to that universal

versal remedy so much searched after by mankind but never discovered.

The methods therefore of purifying it already recommended, viz. boiling, filtering, and distilling, should never be lost sight of, where it forms the chief beverage of life; and any tendency it may discover to putrescency may be easily removed by the farther addition of an acid, as a small portion of allum, or quick lime, or charcoal powder, or vegetable acid; but these additions will be only necessary where it is kept long in a stagnant state, as at sea.

FERMENTED LIQUORS.

The next division of drink is into fermented liquors, or into water impregnated with various vegetable substances, so as to change its nature by the process of fermentation. These impregnations consist of considerable variety, but they may be all arranged under the three head, of---malt liquors, or its impregnations with grains; of wines, or its impregnations with fruits; and of ardent spirits, or the conversion of the former impregnations of it into a different state by a second process, or distillation.

Fermented liquors are all more or less poignant to the taste, and hence they have more influence in quenching thirst than water alone. They stimulate the mouth, throat, and stomach to throw out their various secretions. By their acescency

acescency they destroy any alkalescent acrimony in the habit. By their laxative effects they promote the evacuation by stool, or the progress of the aliment through the intestines, in consequence of the increased irritation or stimulus they communicate to the bile; and, when conveyed into the blood vessels, they accelerate the several discharges by the portion they retain of their saline nature.

Fermented Liquors are of great antiquity, which the most ancient traditions show, and even among the most uncivilized nations some attempts towards fermented liquors we find made.

MALT LIQUOR.

The first of the fermented liquors to be noticed, in the division of them laid down, is the impregnation of water with some of the grains or farinaceous seeds, by the process of fermentation. In order to make it, the saccharine matter in the seeds or grains must first be evolved by malting, and then it is rendered fit for the purposes of brewing. The origin of fermented liquors from grain is very ancient in all those countries which could not produce the grape. Barley is the grain chiefly preferred for making it, as it is a grain that gives out a greater quantity of sugar under germination. The quality of the product depends on the quantity of saccharine matter employed, which is regulated by two circumstances, the perfection

perfection of the malting, and the complete extraction of the saccharine matter by water, and by the greater or less dissipation of the water or solvent. In order to fermentation taking place, the solution of the malt, distinguished by the name of wort, requires some ferment or yeast to be added to it, and even with this addition the fermentation of malt liquors can never be reckoned as entirely complete. Hence, though more nourishing than other liquors, it is always viscid, and heavy on the stomach.

The quality of malt liquor is perhaps more varied than that of most others, and this variety can only be ascribed to the imperfection of the process employed, which requires a very nice and accurate management. In conducting the process the chief points to be attended to, are---

1st. The proper point to which the drying of the malt should be carried, so as not to lessen its saccharine produce, and yet to have the dryness of the grain complete.

2nd. The purity of the water or solvent, which should be the softest and most limpid that can be procured.

3rd. The degree of heat, used in making the infusion or the extraction from the grain.

4th. The period of boiling the infusion, and adding to it the bitter or hop.

5th. The quality of the ferment submitted to their process, which should be perfectly sweet and fresh.

6th. The

6th. The proper conduct of the fermentation itself, in its degree of heat, and its exclusion to a certain extent of the external air.

Malt liquor is divided into different kinds, from its colour, and the different places at which it is brewed.

From the first it is distinguished into pale brown and amber coloured liquor; where the malt is slenderly dried, so as to tinge the liquor less in brewing, the product is termed pale ale; where it is higher dried, or roasted as it were, in comparison with the former, and gives it a higher colour, it is termed brown ale; and where a mixture of both takes place, by first slightly drying and then slightly roasting it, the liquor from its colour is termed amber ale. The pale ale, as containing most of the grain, is most nourishing and viscid, though difficult to be digested. The brown ale, being less viscid, passes off easier by the different excretions. Pale ale, made with hard water, is reckoned the best and lightest, and is most readily discharged from the body; soft water, however, is generally preferred in the making of this liquor, as it draws out a greater quantity of saccharine matter from the grain.

All malt liquors are much improved by age, by which they are rendered more wholesome. By keeping, they turn less viscid, and consequently become less heavy and more digestible; at the same time there is a period beyond which their age should not be protracted, for then they will

will suffer a natural decay, and the more spirituous parts of the liquor escaping, the remainder turns vapid and sour. Malt liquors are also improved by the different manner in which they are kept; if bottled in proper time, before their gas is dissipated, they acquire an agreeable, pungent taste; but if too long of bottling, they turn flat, insipid, and, in the end, sour.

Malt liquor seems to have been known at a very early period, and to have been distinguished by the ancients under the names of barley wine, and the strength of corn. It even formed the common drink of the lower orders in the wine countries. To all liquors of this kind hops make a necessary addition, both for their preservation and also for their digestibility. By the hop, the acid of the liquor is in some degree neutralized; and the grateful wholesome bitter of the hop promotes the action of the stomach to overcome the viscidness of the liquor itself; all liquors, therefore, without hops, possess a clammy sweetness, and soon turn vapid and sour. From these circumstances, the wholesomeness of malt liquor will depend much on the proportion of hops it contains, and upon its age rendering its fermentation more complete, and gradually converting its viscid or nutritious particles into spirituous; so that with time it becomes more stimulant and intoxicating, but less nourishing and less viscid. Thus the different degrees of fermentation, both in the original brewing and
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also in the after keeping of it, considerably alter the nature of the liquor. In the malt liquors of this country, a full and complete fermentation is generally allowed to prevail; and in order to fit such liquors for a warm climate, the grain is even twice mashed and twice boiled. In the German ales, on the contrary, little or no fermentation, is permitted to take place. In the Dantz'g black beer there is only a half fermentation allowed, while in the Burton and some rich ales of this country the fermentation, in the other extreme, is more than completed. The superiority, therefore, of British ales may be considered as depending on the two circumstances of the *excellence of the materials used*, or the *quality of the malt and water*, and the *perfection of the process itself*.

The principal kinds of malt liquor in use in this country, are ale, porter, and small beer.

Ale.

Ale possesses in its composition a less quantity of hop, is highly nutritious, but more viscid than the porter, and wants the same proportion of hop to render it light on the stomach. Hence more attention should be paid to its age and fineness, before it used, than what porter requires.

Porter.

Porter is a peculiar beverage, the mode of preparing which is known to few. With the common

common properties of other malt liquors, it possesses such stomachic and diuretic effects as render it preferable to all the other kinds. It has been considered as strongly impregnated with bitters of a narcotic quality, and if this is the case its use should be circumscribed. It was formerly much superior to what it is at present.

Small Beer.

Small beer, as containing a less proportion of saccharine matter than the other kinds, is consequently less heating and stimulating. It should only be used soft and mild, for when stale and hard, which it often is, it should be particularly avoided, being apt to produce choleric and dangerous bowel complaints.

Spruce Beer.

Spruce beer is an article powerfully diuretic and antiscorbutic. It contains a large quantity of fixed air, is highly refreshing in summer, and sits easy on the most debilitated stomach; but, from its peculiar flavor, it is disagreeable to the taste of many.

All malt liquor is commonly drank in two states, either off the cask, or bottled.

In the first state it contains but a small proportion of fixed air, as by the openness of its situation its gas is in part allowed to escape. Hence it in general agrees better with the stomach,

mach, and does not subject it to flatulence and eructation.

In the second state, or bottled, it contains all its gas, and acquires from it an agreeable poignant taste; being better fitted to allay thirst, though it is liable to disagree in some stomachs, from the rapid extraction of its air, and thus to produce distention and uneasiness. It is, however, in this state, a powerful antiseptic, and highly proper in putrid habits. To procure its poignancy or freshness in perfection, three circumstances should be attended to in the bottling of it---the first is, that the bottles be full to the top; the second is, that the cork be properly fitted; and the third, that the posture of the bottle should be such as to keep the cork swelled on every side. With these precautions, if bottled in proper time, and afterwards exposed as little as possible to variations of temperature, it will drink with much relish, and only require to be ripened by increasing its temperature, or exposing it to some degree of heat, for a few days before using it.

In the choice of malt liquor, more than any other drink, every one must be much determined by its effects; for if not agreeing after one trial, no one should persist in the use of any particular kind of it; and therefore in travelling we should never think of calling for malt liquor, as it is so uncertain in its nature.

The

The tests which are generally held out as proper to determine our choice of it, are its clearness and good colour, its fragrance and agreeable taste, its sparkling when stirred or agitated, and if it can be learnt, the maturity of its age.

Malt liquor, then, is in all cases a nourishing beverage, and disposes to obesity or fatness, as is sufficiently proved by the number of fat people in England and Holland, where they are chiefly drank; compared with France and Spain, where wine is their beverage, the proportion may be stated at 100 to 1. Hence malt liquor is most suited to the dry and rigid habit, or to those who are least disposed to a fulness or plethoric state. From this excess of nourishment in malt liquors, it produces also a heaviness and torpor of mind. Thus the drinkers of it are duller and more phlegmatic than those who confine themselves to the use of wine. The stronger kinds of it, too, where they are taken so as to produce intoxication, occasion a more permanent kind of it than other liquors; and a debauch from malt liquor is longer of being got the better of, than the same state produced by any other kind of beverage. Malt liquor, then, is best suited to those who pursue an active and laborious life, and with such it is often drank in considerable quantity. It is improper for those who possess a weakness of stomach, or a tendency to an excess of acid. If such persons use it, they should confine themselves to the lightest, best fermented

fermented kinds, and where the hop or bitter predominates. The sweeter kinds have, however, less adulteration, and are therefore safer and more wholesome for daily use. When turning sour, malt liquor is corrected by the addition of alkaline substances, the ashes of barley straw, or chalk. Where it tastes of the cask, this is taken off by a small quantity of wheat, in a bag suspended in it. The consumption of malt liquor in Britain amounts to upwards of five millions sterling.

WINES.

Wines, the second division of fermented drinks, includes a still greater variety than malt liquors, and this variety may be arranged into *home* and *foreign* wines.

As malt liquor, then, is the production of grains, by the process of fermentation, so wine is for the most part the production of fruit, by the same means; and the difference between them lies in this---that the grains, from the strong admixture of their saccharine with their other principles, can never allow their fermentation to be so complete as for the making of wine; while the fruits, abounding in a saccharine matter easily detached from their other parts, allows its ready and full conversion into the vinous state. Thus wine is the juice of fruit, impregnated with a certain portion of
alcohol

alcohol or spirit, and receiving a peculiar modification or flavor from the matters (as fruit) with which it is originally blended.

Wine is seldom presented to us in a perfect and pure state; and, from the nature of its process, even in its best condition, it consists of different parts; these are its must or sugar, its proper vinous part or spirit, its acid, and its water; each of these parts we shall separately consider, and afterwards the varieties of the liquor in its compound form.

Different Parts of Wine.

The first part, or must, is that quantity of the original saccharine juice from which the wine is prepared, which remains still unassimilated, and which has neither passed into wine nor spirit, nor gone beyond this to the length of vinegar. It is from this part wine is apt to cause in the stomach fermentation and acidity, as from this part a quantity of fixed air is extricated, which weakens the tone of the stomach, produces spasm or uneasiness, and interrupts the course of digestion. Hence sweet wines, which abound in this part, are more apt to disagree than others.

The second part may be termed the proper wine, as containing alcohol or spirit. Its effects are chiefly displayed on the nervous system. In moderate quantity it simply stimulates, increases the action of the heart and circulation, and augments the nervous energy over the whole body;

body; communicating a serenity and ease of mind; a liveliness of imagination, and a powerful exertion of every faculty; but if, on the other hand, it is taken immoderately, these favourable appearances are changed, the powers of the nervous system are weakened, the action of the mind is deranged, and in the end both motion and sensation of body become lost.

The third part of wine, or the acid, is of two kinds---that which is evolved during the whole progress of fermentation, and which constitutes a proportion of the wine or alcohol---and that which is generated from a part of the liquor passing on to the acetous process, which when separate we distinguish by the name of vinegar. It is this part that renders the wine more agreeable to the taste, stimulates the mucous glands, and allays thirst; and it is from this part wine possesses the power of obviating putrefaction in the body. But this part, on the other hand, when too predominant, proves essentially hurtful, by weakening the stomach, occasioning an excess of acidity and destroying the tone of the organ, particularly in gouty and hypochondriac cases.

The last part of wine, its proportion of water, is the most innocent part of it; and by the quantity of this part its other qualities are moderated, and the more water it contains the more suitable it is for a beverage, and the more it is calculated to quench thirst.

In its compound state wine is much more innocent than when taken in its separate parts, as we have just described; but at best it is to be considered only as a temporary tonic or exhilarant remedy, and that the use of it is succeeded by effects which should abridge the drinking of it as an alimentary liquor.

The variety or different condition of wines depends on the nature of the matter or fruit from which they are made, and on the circumstances observed in the process of making them. In regard to the first, the chief difference will lie in the quantity of sugar the fruit contains, and this quantity will be regulated by the kind of the grape, and by the soil and climate in which it grows, or by the allowing it to acquire a full maturity without any mixture of acid or acerb parts. With regard to the conduct of the process, the more brisk the fermentation is conducted at first, the greater will be the produce of alcohol; but when this brisk fermentation stops, which it soon does, and the slow one commences, the longer it is protracted, the more perfect the wine will be; yet if pushed too far, on the other hand, it is apt to pass into the acetous state. Hence the great nicety required in the process, the brisk pushing off the first stage of fermentation, the slow conducting of the second or maturing one, and the entirely checking it before the third or acid stage begins.

HOME WINES.

Cyder and Perry.

The first of this class that fall to be noticed, though not commonly receiving the appellation of wines, are the produce of the pomaceous fruits, the apples and pears. The liquors, named cyder and perry, may be considered as a sort of intermediate ones between malt liquors and what are properly named wines. They are less alimentary, more acescent, and less stimulating than the malt liquors; and they contain less alcohol or spirit, and also more acid, than the wine.

Cyder.

Cyder is best drank when middle aged, for if too new it causes flatulence and bowel complaints. It should have a pungent and sweet taste, and a pleasant smell. Its use has been reckoned safer than that of wine; it does not so soon intoxicate, but where it does the intoxication is more permanent. This liquor is properly, from its taste, divided into three kinds---the rough, the sweet, and the insipid. The rough cyder is reckoned the best, where it has not too much acidity; and even in that case it is a highly useful and refreshing drink in hot weather. It has been particularly recommended in scorbutic states of body, or where the fluids are vitiated from an acrimony of an alkaline nature. It is common

to improve cyder by an addition of alcohol, in the form of brandy; this is less necessary with the rough cyder, but more so with the sweet and insipid.

Perry.

Perry, like cyder, differs according to its taste, age, and making. The first depends on the maturity or kind of fruit of which it is made---the second, or the time it is kept, requires much attention, as it does not so soon fine as cyder, and possesses a greater quantity of viscid parts---and the third lies entirely in the perfection of its fermentation. Perry is in general reckoned a safer liquor than cyder, from its shewing less acidity. It is particularly recommended as counteracting the poison of mushrooms or other fungous productions, and in that case is improved by an addition of alcohol. The best perry, like the cyder, is the rough kind, and in its colour and taste it resembles the Rhenish wine.

All liquors of this kind, which are liable to produce flatulence and acidity, are much improved by their junction with sugar and aromatics, as nutmeg and ginger; and this is the more necessary, as such liquors have been suffered to acquire often a deleterious quality, or impregnation of lead, from the vessels in which their fermentation takes place.

MADE WINES.

Made wines are such as are produced from the fruits of the northern countries, with a large proportion of sugar, so as to make up for the want of the grape which the rigour of their climate denies them. These wines have been reckoned by many, unwholesome; but this can only happen when their fermentation is not well conducted, or when they are made use of before they have attained a proper age.

Birch Wine.

The first of these wines we shall take notice of is the birch wine. It is of a thin acidulous nature, somewhat resembling Rhenish wine. It is much recommended in gravelish complaints and a vitiated habit of body; and it is improved in its diuretic quality by the addition of a certain proportion of honey. It is frequently used as a gargle in sore throats, and is the most inoffensive of all the made wines.

Gooseberry Wine.

Gooseberry wine is reckoned the most powerful of the made wines. It should be made before the berries are fully ripe, and it should be kept several months after fermentation, till it is clear and fine; it then makes a delicious cooling beverage in summer.

Curran

Currant Wine.

Currants afford a good wine, which assumes, when it is bottled two or three months, a delicious taste with some tartness, and possesses a beautiful ruby colour and pretty strong body. Like the former, it is a beverage well suited for the summer, and is useful in bilious complaints during that season. From its acescent quality, it is considered as an antidote against the influence of narcotic poisons.

Cowslip Wine

Has a grateful, cooling taste, from the addition of the lemon in its composition. Hence it forms a pleasant summer drink, and is proper in all cases of feverish agitation. Like the others, it possesses something of a diuretic quality, but is particularly distinguished by being more grateful than any of them to the taste.

Orange Wine.

Orange wine possesses something of a stomachic quality. Its use has been recommended in a morning to wash off viscid slime from the stomach, and correct the quality of the bile, so as to create an appetite and give tone to the stomach. Like the other wines, it is somewhat diuretic, is best used in summer, and more adapted to young inflammatory constitutions than others.

Alder Wine,

When well fermented, and having a proper addition of raisins in its composition, is frequently a rich strong liquor. It keeps better than many of the others, for a number of years, and was formerly supposed to possess many medicinal virtues; but these experience does not seem to sanction, and the virtues of the alder, like those of many other simples formerly prized, have sunk into oblivion.

Raspberry Wine.

The most delicious of the made wines are those produced from the strawberry and raspberry; and they are equally agreeable to the smell and to the taste. From their flavor they are considered as possessing a powerful cordial quality in case of faintings and other low nervous states; they are likewise of a diuretic nature, and employed in gravel and disorders of the kidneys. They form in summer, like the other wines, a refreshing, pleasant drink, which in point of flavor exceeds them.

Mead.

As well as from fruits, wine has been made in the northern countries from another substance in consequence of the quantity of sugar it contains, honey. This liquor is termed *mead*, and it holds a middle place between malt
liquors

liquors and the sweet wines. Mead is made by boiling honey and water with aromatics, as cinnamon, ginger, nutmegs and cloves; and afterwards subjecting it to fermentation, like other wines, by an addition of yeast. When kept to a proper age, it becomes clear, fine, and of a pleasant vinous taste. It is considered as particularly useful in nervous cases, being a powerful cordial, and approaching in its nature to the wines of Spain and Portugal; though it differs from them in possessing, along with its stimulant a nourishing quality. It forms, therefore, the most proper drink for the aged and infirm, and is also most suited to the winter season. In many constitutions, however, honey is a peculiar substance and disagrees, occasioning uneasiness of stomach and bowel complaints; wherever this is the case mead forms an improper beverage. Even when it agrees, it should never be drank till it is fine, as it contains more viscid parts than other wine, which should be fully deposited before it is tasted.

Metheglin.

Metheglin differs little from mead.

Hydromel

Consists of the same materials as mead, but it is not subjected to fermentation, and is more therefore a drink resembling table beer than of a vinous nature. From its being a preparation of honey,

it possesses in a certain degree the same qualities and the same inconveniencies as mead.

FOREIGN WINES.

But the great beverage of this country is foreign wines, or concealed imitations of them. We shall first consider the chief varieties of them, and their particular qualities, and then examine the principal methods of their adulteration.

The wines of the northern climates are generally of a weak body, somewhat acrid and sharp to the taste, and they afford a large proportion of tartar. This sediment or saline incrustation always accompanies sharpness and austerity, and from this matter such wines are supposed to give a disposition to the stone. The most remarkable of these northern wines are the rhenish and the hock, which are perhaps of all others the least heating, and from their acescency the most diuretic.

The southern wines, as the grape is ripened by a more genial sun, are accordingly strong, sweet, and unctuous. Of this sort, the Hungarian wines, and especially the tokay, is the best at present. The canary wine, from its insular situation, and the less exalted juice of its grape, it is not so rich as the former. Madeira, though a warm climate, from the mountainous situation of its vineyards, possesses an austerity in its grape which renders its wine, though

though grateful, somewhat acescent. It requires, therefore, before being sent off, a certain quantity of alcohol to give it body; and in order also to give it a proper degree of activity, it requires to be kept some time in the warmer climates. Hence the propriety of the common practice of carrying it to the West Indies, and depositing it there for a certain period before being returned to Britain for use.

The Italian wines, though the produce of a southern climate, are sweet and weak, from improper conduct in their fermentation; on that account they seldom keep good above a year, and their bottles are generally covered with oil at top, when brought over, to guard them from spoiling.

The Spanish and Portuguese wines contain a great proportion of brandy in their composition, and from this cause they are of a heating inflammatory nature.

The red port is the kind most generally used in this country. From its proportion of spirit it possesses nothing of an exhilarating effect, and the saying of the French, that they drink claret to raise their spirits, and port to make them stupid, is properly applied to it; for, though termed by some authors a generous stomachic wine, it is only when taken in a very small quantity.

The French wines are with justice preferred to all the others, though the product of a northern climate, for the northern French wines are

best; they possess sufficient strength to animate without any addition of spirit, and their fermentation not being so active, they do not easily spoil. Champagne, from being more active in its fermentation, is less safe than the Burgundy, which is generally more mellow, and also very heady; but a good deal depends on the manner in which it is imported, for its delicacy. Claret, as being weak and somewhat acerb, and at the same time having no spirit in its composition, is generally safer than most others, and shews less of a heady quality.

From this view of the principal kinds of wine, we shall consider separately the predominance of different qualities which are found in different kinds of it.

Qualities of Wine.

Sweetness in wine depends on two circumstances---either in the natural richness of the grape, as in the Canary and Tokay wines; or on their imperfect fermentation, by racking them off too soon into other vessels, or adulterating them by an addition of must.

Sharpness in wine proceeds, again, from three causes---from the nature of the grape, as is displayed in all the northern wines; or from an active fermentation, when the wine is apt to produce gouty and nephritic symptoms, by its injuring the tone of the stomach; or from the wine having been too long kept, and passing in part into the acetous state.

Flatness

Flatness or want of poignancy in wine depends on either an insufficient fermentation, as where it is checked by the addition of brandy; or on its age, or its being too long kept without the access of air to admit the acetous process, when it turns simply vapid.

Briskness or poignancy is always the effect of an active fermentation, and of a crude and not fully matured state, which, though agreeable, renders the wine more injurious. It is this state which has occasioned a distinction into those wines which confusc the head, and into those that are more permanent in their effects and produce fever. Wines, therefore, that retain long their flavor when poured out, are considered as highly intoxicating.

Strength of wine depends entirely on its proportion of alcohol or spirit; but its effect on the body is not entirely regulated by this rule. Wine diluted sooner intoxicates than unmixed, by affecting a larger surface of the stomach, and occasioning its quicker diffusion over the system; and in proportion to this quick diffusion are its effects also of a temporary nature.

Smoothness in wine is connected with its sweetness or mellow state, but is different from flatness or vapidity.

Roughness in wine arises from the natural acidity of the grape, its want of maturity, artificial additions giving it this quality, or a mixture of husks with the must. This taste of wines renders them gratefully stomachic, powerful

ful in counteracting acescency, and tonic to the stomach and bowels.

The *colour* has in general little influence on the qualities of wines, and is generally adventitious, being often given them at a late period, when in the merchant's hands.

From these observations on what we may term the natural qualities of wine, it is proper to detail next what may be named their acquired qualities, or the various modes employed by the manufacturer and merchant to adulterate and debase them.

Adulterations of Wines.

Wine we find adulterated in a variety of ways, but all the purposes it is intended to serve may be comprized under the three heads of,

1. Giving them strength ;
2. Lessening or removing their acidity ; and,
3. Perfecting or changing their colour.

To give strength to wine, the chief methods employed are their mixture with unfermented wort or the mash for spirits, and even with new corn spirits themselves, and also by adding to them various spices of a heating nature. This practice, though debasing their quality, is by no means so unwholesome as that of giving them a tincture of lime, or plaister of Paris, in order to procure that hot and pungent taste which a mixture of brandy conveys. This practice is very common in France, in Germany, and in Italy, and

and is universally in use in the islands of the Archipelago and along the coast of Africa.

To lessen or to remove the acidity of wine, it is common to mix with them cyder, or turnip and carrot juice. The doing this, though debasing the quality, is not to be considered as pernicious; but as these methods often do not fully succeed, an impregnation of the wine with lead has been had recourse to for the same purpose. Indeed, it is even pretended that it is necessary to ferment all made wines in leaden vessels, as an excuse for this practice. It is more employed in the white wines than any other, and much caution, therefore, should be employed when they are drank. The poison of lead is known to be one of the most deleterious that can attack the human body; it deranges, in a short time, the whole system; it produces head-ache, contraction of throat, pain and uneasiness of stomach, with that particular species of cholic which is termed the dry belly-ache, attended with constant constipation, terminating in palsy, and in the end, consumption and death.

To perfect or change the colour of wine, the first circumstance noticed, it has been common to change white wines into red, when they grow brown and rough, by tinging them with red shumach, sloes, or other woods and berries. The same thing is done with new tart white wines, or whenever a great demand at market takes place for a particular kind of wine; this, however,

however, does less injury than the other practices we have taken notice of, to alter their quality.

It is of much consequence, for our own safety, to be able to detect the adulteration of wines. Every white wine of a sweetish taste, conveying afterwards a sense of astringency and newness, is to be suspected. The same suspicion should affect every wine that displays an unusual high colour, not bearing a proportion either to its strength or age. The same suspicion is also to be attached where the wine, with the flavor of brandy, makes a strong penetrating impression on the tongue. Uncommonly high flavored wines fall under the same description. Red wines depositing a sediment, or colouring the glass, may be considered as artificially tinged, and an extreme of colour, either very deep or very faint, particularly with a woody or a tart taste, is liable to the same suspicion.

The methods of detecting these adulterations depend on their particular nature. For the detection of metallic impregnations, the probatory-liquor of Hannemann is most generally employed; and the composition of it consists of a drachm of liver of sulphur and two drachms of cream of tartar, which are shaken in two ounces of distilled water, till they be completely saturated with hepatic air; the liquor being then filterated through blotting paper, is kept in a close stopped vial for use.---Of this liquor 20 drops may be dropped into a small glass full of adulterated wine;

wine; if the wine turn thick and cloudy, depositing only a white sediment, the wine contains no metallic impregnation; should it, however, turn either black or muddy, with a colour approaching to dark red, and discovering a taste at first sweet and then astringent, *lead* in some form or other enters its composition; where the dark colour assumes a blueish cast, like pale ink, instead of lead the impregnation contains *iron*; and if the sediment, instead of this, discover a blackish grey colour, the adulteration then consists of *copper*, or verdigrease. In making all such trials the test should be fresh prepared, and the experiment made in the open air. Where the white wine is simply coloured by vegetable substances, or acquires its colour from the cask, the test when employed will render this colour darker, and produce a sediment of brown streaks. In order to preserve white wine, it is well known they must always receive a slight impregnation of sulphur. Where this impregnation exceeds, it renders the wine more heating, and intoxicating; and produces a variety of disagreeable symptoms of the nervous and cutaneous kind. Nothing is, however, so easy as the detection of sulphur, for a piece of silver is immediately blackened by it, when immersed in the wine. The last adulteration of wine, if it can be called so, is with water, and the detection of this is easily made by pouring a little of it on quick lime,
for

for if water is present, the lime is slackened by it, if not, it remains entire.

From this detail on the composition, and nature of wine, we are led to conclude, that a temperate use of it is conducive to health. That the powers of the body and mind are in a certain degree roused by it. That the circulation is invigorated, the nervous system strengthened, and the action of the stomach increased. But these good effects are all bounded by a very limited use of it; and by the use chiefly of those kinds of it, in which water enters more largely into their composition than the spirituous part. But even these good effects are but of short duration. They attend only its action on the stomach, and are, therefore, most powerful when the organ is empty. It is only a stimulent and cordial for the moment, and in proportion to the excitement, it produces a corresponding debility, and relaxation.

In immoderate quantity, wine is attended with the most fatal consequences to the human frame; when drunk to excess, it becomes a slow poison, the danger of which is increased by being so palatable and agreeable to the taste; at the same time the extent and progress of its effects are much regulated by the state of constitution. Thus we find, that many can drink largely and habitually of this liquor in its pure state, or without mixture, and feel no sensible inconvenience, or attack of disease, to threaten

threaten or cut short the thread of their existence. But on the other hand it is to be observed that this is more rare, and that both health is destroyed, and life shortened by intemperance in this beverage. Wherever, therefore, wine is used, moderation is indispensable, and particular attention is also necessary to the constitution, so far as to ascertain how wine seems to agree with it. The diseases from wine are of two kinds, instantaneous or temporary, and chronic, or those of a more permanent nature, and also gradual in their attack. The first is known by the name of *intoxication*, and is hardly considered as a disease, though there is little doubt that it bears a near resemblance to the incipient state of apoplexy or palsy. The symptoms of this state are a staggering, or irregular motion; the loss of speech or imperfect utterance, double vision, or else a circular motion of all objects. The mind also is affected, as well as the body, with imbecility and weakness. In a higher stage of drunkenness, all the organs become motionless and paralyzed, except the heart, which, along with the breathing, continues its action, but the power of sensation seems entirely lost. The consequences of intoxication are frequently fatal from an effusion of blood, or rupture of small vessels, inducing real or permanent apoplexy, and if not immediately fatal, a spitting of blood from the lungs is often the fruit of such excess.

The

The peculiar diseases from the too free use of wine are more gradual and insensible in their action. Hence, wine drinkers are generally deceived, and till the actual ruin of their health takes place, they are not aware of the danger. Where wine disagrees, its first effects are generally displayed on the stomach, the breath acquires its smell, the person is subject to sour eructations and occasional pains in the head, stupefaction and nausea are also occasionally felt, and the temper becomes morose, peevish and irascible under it. These symptoms are attended with an increasing langour and listlessness, and the age of the person seldom exceeds fifty years, when he falls a sacrifice to obstructions of the liver, or other organs, ending in dropsy.

Where wine on the other hand agrees, the symptoms described seldom occur, or but in a slight degree; the feelings under it are accompanied with cheerfulness and vivacity which lead to too free an indulgence; and though the constitution does not immediately suffer, as in the former case, yet it becomes very strongly undermined before the age of sixty, and the inheritance of its last years is gout, palsy, or an accumulation of disease.

The effects of wine, in producing temporary intoxication, depend much on constitution and circumstances. Thus those possessed of much sensibility and feeling, are sooner intoxicated than the more dull and phlegmatic. Intoxication

on also sooner takes place in a cold temperature, where the perspiration is checked, than under warm atmosphere; the same observation may be made with regard to an empty stomach, for the influence of wine is here more powerful than when the stomach is distended with other matter.

As the effects of intoxication are merely temporary, a supine posture, with the head raised, and a temperate situation are all that is necessary to be attended to till the symptoms wear off. Should sickness or vomiting ensue, it may be promoted by diluents; but the best remedy in these cases, is refreshing sleep.

After intoxication the body is left in a weak nervous state, and the stomach in particular, is much disordered with an excess of acrid secretion upon it. In this case absorbents, such as magnesia, are indicated, and after this, some remedies of the strengthening or mild cordial kind may be had recourse to, as warm negus, coffee, &c.

On the whole, wine to excess destroys the stomach, induces emaciation and debility, and occasions inflammation and obstructions in the different organs. From this source a train of disorders arise, which though deceitful and protracted, always terminate in the miserable fate of those who indulge in this intemperance.

ARDENT SPIRITS.

Under the denomination of ardent spirits is included the product of every fermented or vinous liquor by distillation.

Ardent spirits when good, should be clear, of a strong and pleasant smell, easily fired, and not tasting too sharp. They are distilled from all those substances that possess a saccharine matter, and that are consequently convertible into wine. It is somewhat curious, that though ardent spirits are the product of vinous liquors, yet they are the most powerful in checking vinous fermentation. Like wine, ardent spirits in small quantities prove a powerful cordial, and for the time, a strengthening beverage. They increase the circulation, raise the pulse, give vigour to the stomach, promote digestion and prevent flatulence. Thus they are of great service to counteract the influences of a moist and cold atmosphere, of noxious exhalations, and consequently are fitted for those employed in occupations of an unwholesome nature. To the weakly and relaxed they are highly useful, by giving an elasticity and firmness of tone. But in a rigid habit they are equally pernicious, by producing a dryness of fibre, and by prematurely hastening the approach of age. They are therefore to be considered as the bane of youth, and should be shunned as arresting the progress of growth, and the

the vigour of manhood. The abuse of ardent spirits is also productive of much more fatal effects than an immoderate indulgence in wine. Wine may be said, for the most part, to sap the constitution by degrees; spirits, on the contrary, attack it by storm, and at once prey on the principle of existence. Thus, by an excess in spirits, the fluids become thick and coagulated; obstructions in the principal organs ensue; the nervous system becomes blunted and depraved to every feeling; the energies of the mind suffer; loss of memory takes place; a train of nervous disorders come on; and the attack of jaundice, dropsy, or consumption, soon completes the termination of existence. In this progress, even the passages to the stomach lose their feeling, become insensate and callous, and the organ itself, taking on the same state, has its digestion impaired, and becomes unfit to prepare nourishment for the body. Ardent spirits, therefore, are a dangerous indulgence, even in the smallest quantity; an indulgence which habit imperceptibly steals on, before we are aware of the consequences it leads to.

In hot weather, from the temporary tonic power they produce, they are useful in abating excessive heat, and checking too copious a perspiration. In the same way, where the stomach is over distended with cold liquids, by increasing action they promote its evacuation from the organ. In cases of over exertion or fatigue, their influence

ence is useful by producing a similar temporary vigour. But wherever the contents of the stomach are sufficiently stimulant to excite digestion, the use of spirits is improper; and by carrying this stimulus too far, digestion may be even retarded or suspended. Hence the impropriety of using them after strong animal food, as is too frequently practised. Hence, also, though they remove flatulence when accumulated in weak stomachs, yet their habitual use, by impairing digestion, renders the organ more liable to this state. When taken sparingly, and much diluted with water, they may be allowed in some constitutions to supply the place of wine, particularly where the stomach is disposed to acidity.

The parts of which ardent spirits are composed are alcohol, water, and some empyreumatic oil from which they are entirely freed by a second distillation; and the proportions in proof spirits are 55 parts of alcohol to 45 of water; while rectified spirit of wine should contain only 5 parts of water.

The principal varieties of ardent spirits employed in diet, are brandy, rum, grain spirits, as gin, arrack, and liqueurs.

Brandy.

Brandy is the spirit drawn from wine. It is distilled from wine lees, as the rhenish brandy or from poor wines, or else from the stalks or husk of the grape, as the French brandy. The French
brand.

brandy is reckoned the best in Europe, particularly that of Bourdeaux, Rochelle, Cogniac, Charenton, Isle of Rhe, Orleans, &c. They are distilled from low wines, which not being consumed in the country, and not sufficiently valuable to carry to a foreign market, are converted into brandy to bring a price.

Good brandy is chiefly known by its vinous smell, without regard to colour, which is entirely adventitious, and either derived from the cask or communicated to it by art. It should also possess a strong body, be properly matured, and easily set on fire. To try its quality, it is common to pour a little of it into the hand, which, when rubbed between the hands and smelt, will at first emit a strong vinous smell, of considerable duration; but if this smell is, on the contrary, strong, hot, and pungent, with a degree of acidity, and of short continuance, the brandy is then adulterated. The strength of brandy is also determined, as well as its flavor, by pouring part of it into a glass, and shaking it till the bubbles rise, from the continuance of which its strength is rated. All spirits, and particularly brandy, are much mellowed by age; and this effect is even accelerated either by burying it in the earth or putting it some months to lie in the sea, by which it acquires a mildness, and loses its disagreeable and empyreumatic flavor. The adulterations of brandy are chiefly detected by the want of the vinous flavor; and to supply this

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much

much use is made of the dulcified spirit of nitre, in the attempts to imitate it. Where brandy is good, it has been considered as bracing and stomachic; but, in spite of this recommendation, it should only be used under the restrictions we formerly noticed.

Rum.

Rum is the produce of the sugar cane, and it has been a question whether brandy or rum is most wholesome; much depends on the particular circumstances in which they are used; from its oily nature, rum appears more balsamic, and is reckoned also to possess even a diuretic and sudorific quality. Rum, to be good, should be of a brownish transparent colour; of a smooth, oily, and agreeable taste, having a strong body and consistence, and being well matured with age. Where it discovers a clear limpid colour, and a hot pungent taste, it is either too new or adulterated.

Rum is in general less liable to adulteration than brandy, and it is a spirit more wholesome on that account. - From its containing a greater proportion of oil, it is reckoned softening and lubricating, and it is perhaps the safest spirit to be drank, as far as ardent spirits can be reckoned safe for the human body. Rum, like brandy, when first distilled, is naturally clear, and derives its colour from the cask or adventitious impregnations.

GRAIN SPIRITS.

Arrack

Is the produce of the East, as rum is of the Western World. It is distilled from rice, and possesses something of an astringent quality; but in its general properties it cannot be said to be essentially different from rum or brandy. From its astringent quality, it is considered as more heating, and a debauch from it is less easily got the better of than from other spirits.

Several kinds of spirits are distilled from other grains, and their quality depends entirely on the perfection of the process by which they are made.

Gin.

In Britain, gin is very much used by the common people. It is properly a rye spirit, receiving an impregnation from the berries of the juniper. In London, however, this liquor is made of a coarse malt spirit, impregnated with turpentine, in the proportion of ten gallons of spirit to two ounces of the turpentine.

LIQUEURS.

Liqueurs are generally made and used on the continent. They consist of spirits impregnated with a large quantity of fruit, sugar, and aromatic spices; they are therefore very hurtful to the stomach, and also soon affect the head. They are the more dangerous from their very palatable taste, which renders them an insidious beverage,

by the use of which a habit of tippling is imperceptibly introduced. The best of them in this country is the shrub.

DILUTED SPIRITS OR ALCOHOL.

Negus.

Negus is a common beverage, and consists of diluted wine with the addition of juice of lemon or Seville orange. It is both an innocent and wholesome beverage; and, from the addition of the fruit, it is both diuretic and stomachic.

Punch.

Punch consists of alcohol diluted with water, with a proportion of acid and sugar; it becomes, therefore, properly a species of wine, and both the acid and sugar counteract the stimulant effect of the spirit. It is best used cold, as when hot it excites too powerfully the fermentation of the stomach, generates acidity, and affects the nervous system. Punch is a much safer liquor than the spirit simply diluted with water, which is termed grog, or toddy. But in whatever way spirits are used, they still retain much of their inflammatory and narcotic nature, and therefore are to be used in all cases with great moderation.

Before dismissing the subject of drink, it is proper to consider three kinds of liquor, which may be termed properly of an alimentary nature or at least are used with that view:---these are the infusions of tea, coffee, and chocolate.

Tea

TEA.

Tea is the dried leaves of a shrub, the produce of China and Japan. It is divided into two varieties, *green* and *bohea*, which vary somewhat in their particular flavour and taste, though they agree in the general qualities of being slightly astringent, bitterish, and aromatic. In their recent state they are possessed of a strong, narcotic property, which is carefully diminished by maceration and drying, so that the acrid juice in which it resides comes to be considerably dissipated. They are dried on iron plates, from a part of some tincture of which their astringent quality is derived, and so dangerous are they held by the Chinese, as not to be used for a twelvemonth after they are plucked. Thus only by a preparatory process are they rendered at all fit for the purpose of diet.

Tea was first imported into Britain about the year 1666, and was confined for some time to the tables of the people of fashion, but in consequence of the pleasantness of its flavour and its fascinating effects, it soon gained a preference over every other diluent beverage, and came into general use. Hence it has shared the fate of all articles in universal demand. Its qualities have been sophisticated, and it has received additions, altering its nature in some degree from what it was on its first importation. These addi-

tions consist, first in concealing a deficiency of natural flavor, or aromatic part by the olla fragrans; secondly, from less attention being paid to the periods of gathering it; and thirdly, from care being employed in the time of curing it, or preparing it for use.

The general effects of no dietetic article are perhaps so little determined, as those of tea. By one party it is decried as a poison, by another it is extolled as a medicine of the first virtues. Truth, however, seldom lies in extremes, and in order to form a just opinion of this important subject, we should examine first, its effects in a state of concentration; secondly, in the form it is most used; and thirdly, trace the different situations of those who use it. With respect to the first, we find that, formed into an extract, or with its juice inspissated, it has been known to kill in the quantity of a few grains. The distilled water has been attended with the same fatal consequences, or, if not extinguishing life, it has produced incurable palsy. Even the effluvia of this herb long smelt at, has been known to produce apoplexy, and several tea brokers, who are accustomed to smell every box that is opened, have fallen victims to their profession in this way. These facts then sufficiently prove the powerful narcotic qualities of this plant when employed in sufficient strength, or in a concentrated state. Experiments also made with it on small animals have produced

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the same fatal issue, and that in a very short space of time after the application of the infusion. The green tea seems also, the most powerful, or possesses the greatest proportion of that active principle on which these effects depend. Indeed all the high flavored teas possess it in an eminent degree. In the common form of infusion in which tea is employed for dietetic use none of these consequences arise. In the East it has been used in this form from time immemorial, but in England it did not become common till after the restoration, when it was introduced at court by Katherine of Portugal. From this time it has gradually come into general use, so much so, that the importation from China in 1777, was upwards of 16,000,000 of pounds, and from that time to the present it has increased to no less than 30,000,000. On its first use, it was generally prepared in decoction, or boiled in a kettle, either in milk or water, the Eastern method; but by this preparation its aromatic quality was considerably impaired. The infusion therefore in Europe, though different from the Eastern method, has been preferred; and by this infusion its narcotic quality is, perhaps, retained more strongly than when part is dissipated by boiling.

The excellence of this infusion will depend on three circumstances, the degree of heat of the water employed, the softness or quality of the water, and the time allotted for the infusion.

With respect to the first, the water should always be brought to the boiling point, and continued as nearly as possible in that degree of temperature; in regard to the second, the water should be mixed as little as possible with any adventitious particles of a saline, or mineral nature; and with respect to the third, the vessel employed, should be so large as to keep the infusion of an equal strength.

The effects of tea drunk in this way are to increase the digestive action of the stomach, and to augment the appetite. Hence it is particularly useful where the stomach is overloaded and nourishment is taken to excess. But in the same way, where nourishment is deficient, or where the stomach is unable to receive it, like all other powerful stimulents it must tend to injure the organ, and show all the bad consequences of its narcotic quality, in exciting various morbid affections of the nervous system. It is in this way that its introduction into Europe has proved so pernicious to the lower ranks of society. Instead of an auxiliary to diet as it ought to be, it has come to constitute the principal part of it, and is drunk at all times of the day, and in such a state of concentration as to act as a real poison upon the body. Indeed to this herb more than to any other cause, we may attribute that change in the constitution of the inhabitants of this country, which has displayed itself so remarkably within this century. Formerly
nervous

nervous complaints were little known or understood, now they are most frequently met with; nor can they be attributed to any other cause, as the introduction of no other dietetic article has been in equal extent within such a short period of time. The highest degree of these complaints, palsy, we find increased as four to one within the last thirty years. Hence the use of this article requires more caution, and attention to counteract its pernicious consequences than any other with which we are acquainted. These consequences steal on by degrees, it affords a beverage fascinating to the taste. It excites a momentary hilarity of spirits after its use, and it is not till after some hours of enjoyment of this exhilarating state, that the faintness and sinking, correspondent to the previous excitement, ensues, which calls anew for the same repetition of it, or some other stimulent to produce a similar effect, The drinking of tea, therefore, should only be conjoined with a due proportion of nourishment. Its narcotic effects should be corrected by boiling rather than infusion, and in some countries it is common to correct this effect by its junction with certain aromatic or sweet herbs. It is rendered grateful to the taste, by the addition of milk and sugar, which should always bear a greater proportion in the making of it than they at present do.

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COFFEE,

Is another article of diet more general in use in the Eastern countries than even tea. Though originally an eastern production, it is now imported in greatest quantities from the West Indies. It consists of a berry, which in order to use requires, like the tea, to undergo a previous preparation, and this preparation depends on roasting, or a proper degree of torrefaction till it acquires a brownish colour, and by this process its qualities are evolved, when it is ground into a powder for use.

The effects of coffee, like those of tea, have been variously reported. It excites on being used the same sensations as tea; and when carried to excess it has been alledged to produce the same alarming consequences. One peculiar quality it is alledged to possess, that of counteracting the effects of other narcotics; hence it is used by the Turks with much propriety, in abating the influence of the inordinate quantities of opium they swallow, and it is employed in this country in a powerful dose with much advantage, as an antispasmodic in asthma.

Various are the methods of exhibiting it. By some it is first boiled, by others it is merely prepared by infusion, as preserving more of its aromatic part. In its nature it is more drying and astringent than tea, hence is more suited to counteract a mild, relaxing diet.

Its

Its use as a beverage began in Persia among the religious of that country, and thence it became diffused among the rest of the people. From Persia it was transported into Turkey, and made its way into Europe through France. It was first known in Britain in 1652, and the profession of coffee-man, and of course of coffee-house, so frequent since that period, was first introduced by a Greek.

The Eastern coffee is still reckoned to possess a superior quality, and that imported from Mocco has the highest character. The quality of coffee may be said in general to depend on four circumstances.

1. The age of the berries, for they should be so ripe as to fall from the tree, or to be shaken from it on the least agitation.

2. The dry situation on which it is raised as increasing their flavor.

3. The manner of drying the berry after it is taken down, for the berries should be spread out in the sun, and the access of damp, or moisture carefully avoided.

4. Preventing their admixture with any other substance, for so peculiar is the nature of coffee that it acquires a taste or flavor from substances placed near it, particularly spirits, or spices. These are the chief circumstances that require attention in order to preserve its quality, and to drink it in perfection as a beverage, an equal attention must be paid to its torrefaction.

or roasting, and the boiling. The degree of torrefaction should be simply to bruise it, and no farther, for then an empyreumatic taste is apt to be produced, and its aromatic flavor destroyed. In the boiling, the infusion being made with boiling water, is to be continued on the fire no longer than till the boiling first takes place, and then removed from it to cool. If carried beyond this the flavor is lessened, and its astringent quality increased.

Coffee is often imitated by the torrefaction of rye with a few almonds.

The use of coffee gives a grateful sensation to the stomach, and exerts a sedative influence on the powers of life. Hence the relief it produces against head-ach, and in certain cases in its first operation it assists digestion. But on the other hand in delicate habits, it excites considerable derangement of the nervous system, and occasions watchfulness, tremors, and not unfrequently it has been known to excite paralytic symptoms. Its effect in the cure of asthma has been often remarked. In the purely spasmodic kind made so strong as an ounce to the cup, and repeated if necessary at the distance of a quarter or half an hour, coffee has entirely removed the fit, and this practice has been continued by patients under this disease for years, affording certain relief to their paroxysms.

Coffee and opium form the great luxury of the Eastern nations. They drink it while
drink

smoking their opium, and thus avoid the narcotic effects of the latter, which their *sherbet* or acid drink also assists.

CHOCOLATE.

Chocolate is more nourishing and less heating than coffee, and particularly when boiled with milk and eggs. It is however apt to be mixed with different aromatics, which render it more heating and less wholesome. The most common of these aromatics, is the vanilla, a volatile pungent substance, occasioning frequently by its use, a train of nervous symptoms. The common chocolate, therefore, is always the most wholesome, and it is frequently recommended as a restorative in cases of emaciation and consumption. Its continued beverage, however, is always in a certain degree hurtful; for, on account of its oily quality, it becomes oppressive, and at last cloying to many stomachs. An immoderate use of it, therefore, is at all times improper with the young and sedentary, for it is apt to produce a state of uneasiness, and not unfrequently fever. It becomes, therefore, a liquor much circumscribed as an aliment, and by some it is reckoned only beneficial when conjoined with a sufficient quantity of milk.

COCOA.

Cocoa being a lighter drink and less heating than chocolate, agrees better with most people, though it is indeed not so nourishing as the chocolate.

OF CONDIMENT.

Having now fully treated on the subject of aliment, or of the various kinds of food and drink, and of the forms in which they are used; it remains only to consider next, what may be termed perhaps an appendage to them, or the various species of condiment employed either to amelorate their taste, to correct their noxious qualities, or to accelerate their passage through the body.

The noxious qualities of food which condiment is intended to correct, are either its tending to flatulence, or its want of stimulus. In doing this however, condiment is frequently apt to heat too much, and it should, therefore, be cautiously employed by those of an inflammatory habit or rigid fibre, and is best suited to the relaxed or phlegmatic.

As foreign condiment chiefly differs from the indigenous in the excess of its stimulus, so the latter should be always preferred as the best suited to the constitution of the inhabitants where it grows.

From the different nature of condiment, it may be properly divided into three kinds, the saline, the spicy or aromatic, and the oleaginous.

SALINE.

SALINE.

Sea Salt.

The chief of the saline condiments is sea-salt. It is particularly used in the preservation of meat before the latter is employed in diet, and in order to do this, it must be largely employed, and intimately incorporated with the meat. From the use of the meat, therefore in this state, much salt is taken into the body, and comes to be diffused into the mass of blood. In moderate quantity, salt, by its stimulent action upon the throat and internal surface of the stomach, has an influence in exciting the powers of digestion, in consequence of its promoting the secretion of the gastric juice. Hence salted meat is often more readily digested than unsalted, and meat of a tough and viscid consistence requires much salt. But at the same time an excessive use of salt in diet is highly prejudicial, by inducing a dissolved state of the blood, and all the symptoms of scurvy; yet salt in small quantities is both necessary and salutary to man as well as to the brute creation. This appears evident from the desire for salt, being a universal instinct, and from its giving a relish to almost every kind of food. The particular purpose of its use we cannot explain, but the acrimony it induces, seems in a certain degree, a necessary stimulus to the operations of the body. Though so useful to man and animals that use vegetable diet, it is found to be a poison to the carnivorous animals.

Along

Along with sea-salt, nitre is frequently employed as an antiseptic in preserving meat. For this purpose it is even more powerful than salt, but being employed in such cases in small proportion, its effects are hardly perceptible in the body.

Vinegar.

Vinegar is a powerful antiseptic, and is variously employed for preserving meat. In small quantities it is a grateful and wholesome stimulus to the stomach. It corrects the putrescency of animal food, and prevents vegetable matters in their raw state from inducing flatulence, neither where it preserves meat is the latter ever so much impregnated by it as to affect its digestion or proportion of nutriment. But though thus useful in a state of health, it is improper in certain deviations from it, or when under the influence of disease; thus it is hurtful to those troubled with rheumatism and gout, to young children, to consumptive and chlorotic cases, and those that are sickly.

These effects of vinegar may be extended to pickles, or such vegetable substances as are preserved by it from every fermentation; for in their preparation their peculiar qualities are lost by boiling, and their chief property is their possession of acidity derived from this article.

Vinegar when properly prepared by a perfect fermentation,

tation, is said to check the ascendency of vegetable matters in the stomach. In this it differs from all other vegetable acids, as they tend both to excite an acid fermentation in the stomach, and also to excite it in all other substances with which they come in contact. With many vinegar is apt to prove sudorific, and even to produce laxity of the bowels. It is best used in hot weather and with animal food. Of vinegar, a considerable variety prevails, but the best kind is that obtained from white wine. When used largely, vinegar is considered as possessing a cooling quality and as weakening the tone of the stomach, hence like other acids, it is forbid in gout and some other diseases.

Sugar.

Sugar is a saline substance of great utility both as food and condiment, and it is indeed one of the chief necessities of life. It is nutritious, antiseptic and laxative. From its promoting the union of oily matters with water, it assists the digestion of fat in the stomach. The chief objection to it seems to be its very fermentable nature, which renders it the frequent cause of flatulence, heat, and thirst with many. With several writers, its use seems to be alledged as having produced in part, the increased frequency of nervous disorders. It has also been blamed as having a particular influence in affecting the teeth. But these opinions do not seem founded on any just foundation.

Sugar

Sugar is much employed in making what are termed *preserves*; and the objection to the use of these is the strong disposition they possess to an acescent fermentation, in consequence of mixing with this substance.

Sugar is a native of both the Indies. It was first introduced into Europe from the East, as an article of trade, by the Venetians; but its use did not become general till after the discovery of America. The preparation of sugar is attended with a considerable waste of the juice; the skimmings of this juice afford excellent food for swine and poultry.

Sugar is used in two states, moist and refined; but the wholesomeness of it is much regulated by its quantity of oil; and hence the moist sugar is more nutritious than the refined. Where used, however, as medicine, the refined is, in many cases, more proper; by its acquiring some degree of astringency from the lime and clay, with which it is prepared. The nourishing quality of sugar is particularly confirmed by what happens to the negroes during the time of expressing the canes, as they get always plump and fat.

Honey.

Honey very much resembles sugar in its alimentary properties; like it, it easily ferments, and in many habits is apt to occasion uneasiness and irritation of stomach, and looseness; it is also considerably more heating than sugar, and
more

more quickly passes off by the several excretions. It is generally more used in medicine than in diet, and is particularly recommended to the asthmatic and those subject to gravelish complaints, from its detergent nature.

AROMATIC OR SPICY.

Pepper.

Of the aromatic or spicy condiments, the chief species are the different kinds of pepper, which are all of a heating, stimulating nature. They possess powerful stomachic virtues, and are proper to be used with all food of an indigestible kind, or flatulent nature. They are best used in powder, as the whole of their virtue is then imparted; though with many people it is common to swallow them whole, in cases of indigestion and stomachic weakness.

Of peppers, the *black and white* is the most common of all spices, both in the East and West Indies, as well as in Europe. The use of pepper in warm climates is carried to great excess; where, indeed, it is necessary, as enabling the body to resist and support the exhausting influence of the sun; in mild climates, however, it is less required, and should be used with a sparing hand, being better fitted for languid and debilitated stomachs than those of a hale sanguine habit.

Long

Long pepper is similar in its qualities to the black and white; as also the *Jamaica pepper*, or *all-spice*, which from its smell resembling a mixture of spices, has received this name; it is milder than the other peppers, and is best used, in whole grains, in broths and stews.

The most stimulating of all the peppers is the *Cayenne*; it is, indeed, too acrid and irritating for general use, in Europe; but, at the same time, though it is apparently so strong, from its diffusible nature, it is less permanent in its effects than the other peppers, and therefore by many reckoned safer. It is found useful in many cases of disease, where a deficiency of stimulus prevails, particularly in palsy and dropsy, or where there is a general cachectic state, attended with much weakness of the digestive organs.

Cubebs.

Cubebs are brought from Java, and other parts of the East Indies. They are a warm spice, agreeable to the smell, and somewhat pungent to the taste. Their qualities resemble those of pepper, but they are inferior in pungency, and are consequently much milder.

Cardamoms.

Cardamoms are a dried pod and seeds, brought from Malabar in the East Indies. These seeds are a grateful aromatic, warm but not fiery, nor liable, like the pepper, to create immoderate heat. The seed should not be separated from

from the husk, but when going to be used, as they lose their flavor. They are highly beneficial after flatulent food.

Vanilla.

Vanilla is a warm pungent aromatic, of an oily taste and balsamic smell. It is a powerful cordial to the stomach, and is particularly used, in Spain, to give an agreeable flavor to chocolate.

Cloves.

Cloves are the unripe fruits of a tree in the Moluccas. They are of a rusty colour, inclining to black; and are said to be cured by exposing them to smoke, and afterwards drying them in the sun; they are a hot, stimulant aromatic. The best kind are the largest and darkest coloured, and those which feel oily when pressed, or emit oil when pierced with a needle. When they are of a light brown colour, their oil has been previously extracted; a practice very much followed by the Dutch, to procure their essential oil. The smell of cloves, though strong, is agreeable; and, along with their pungency, they discover some degree of bitterness to the taste.

Mace and Nutmeg.

Nutmeg is a strong pungent aromatic, of an agreeable flavor, less heating than cloves, but possessing an essential oil of a narcotic nature, which has been known to produce, in certain cases,

ases, all the consequences that arise from the use of narcotic poisons.

Mace is the skin or covering that immediately invests the nutmeg kernel. It therefore agrees in its general properties with the nutmeg, though it is considerably milder.

Cinnamon.

Cinnamon is the most delicate of all the spices, and is much used for procuring a grateful and agreeable taste to various kinds of aliment, either by sprinkling its powder upon them, or bruising or boiling it among them. It is seldom, however, to be procured genuine. The best cinnamon is of a yellowish red, externally; and, internally, of a somewhat darker colour, and smooth; when broken down, it is of a highly fragrant scent, and pungent taste. The smaller pieces are preferable to the large. The cinnamon is highly useful in weakness of the stomach and bowels.

Cassia Bark.

The Cassia bark, from its resemblance to cinnamon, is much used in its place. It is much inferior in its aromatic properties; its bark is also thicker and coarser, and it breaks smooth, while the cinnamon breaks in splinters. It is less heating than the cinnamon, and therefore may be used in greater quantity.

Ginger.

Ginger.

Ginger is an agreeable and wholesome aromatic, possessing less acrimony than any of the others, and it is neither irritating nor inflaming. It is a useful addition to all flatulent food, and particularly to fruits of a cold austere nature. It is a good stomachic beverage, when made into tea, and useful in a variety of complaints.

Mustard and Horseradish.

Mustard and horseradish are less stimulating than the spices, and they are therefore employed with greater safety as condiments in temperate and cold climates. They are chiefly used along with food, and they stimulate the stomach, and assist digestion; beyond which their effects are also carried, as they promote both perspiration and urine, and obviate a putrescent tendency in the system. Hence the vegetables possessed of this peculiar acrimony are distinguished by the name of antiscorbutic. While, therefore, the aromatic spices form the proper condiment for vegetable food, the acrid substances of the present kind are more suited to be used with animal food.

Besides these articles, all the plants of the garlic kind might be here mentioned; but we have already taken notice of them, amongst the articles of vegetable diet.

Asa Fetida,

A particular condiment, more commonly used in medicine than diet, falls to be mentioned, when

when on this subject:---this is the *asafetida*; which, in the countries producing it, has a less disagreeable odour, and is therefore used as a condiment; and, even in this country, it is employed by some persons who relish its odour; and where it proves grateful to the taste, it is useful in promoting digestion.

The spicy sweet herbs of this country, such as *marjorum*, *thyme*, and *sage*, are much used as condiments in soups and broths. They are less hurtful than the foreign aromatics, are well calculated to assist digestion, and are not liable to the adulterations that foreign spices often receive.

COMPOUND CONDIMENTS.

The condiments we have thus considered separately, are often employed in a combined form. These combinations are various; but two forms of them are particularly used, under the names of ketchup and soy.

Ketchup.

This is prepared from the juice of mushrooms, submitted to a putrefactive fermentation; and in this state an addition is made of salt, vinegar, and aromatics, when it is fit for use.

Soy.

Soy is a preparation from the seeds of a particular species of the *dolichos*, submitted to fer-

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mentation in a strong solution of common salt; it possesses, therefore, a saline taste, with little aromatic flavor.

To conclude our opinion of saline and aromatic condiment---the whole of our seasonings may be said to consist of salt, vinegar, and aromatics, combined. They are taken in small quantity, merely to give sapidity to the food; they increase the appetite, and favor a proper quantity of aliment being taken. Where, again, they are taken immoderately, they cannot fail to weaken the stomach, to produce general irritation of the system, and to occasion acrimony of the fluids.

OLEAGINOUS.

Olive Oil.

The chief of the oleaginous condiments to be noticed, is *olive* or *sallad oil*. It is of a mild, bland nature, with little odour or taste. When used as a seasoning to raw vegetables, it checks their fermentation in the stomach, and thereby prevents them from being too flatulent. Where thus employed, in small quantities, it assists digestion; but where taken in large quantities, it cloyes the appetite, and lays the foundation for bilious complaints. When used, it should be fresh, mild, and of a sweetish taste. But in almost no case does it agree with weak stomachs, for in them it readily acquires rancidity, and injures digestion.

Butter,

Butter.

Butter we have already considered as an article of diet; but, as a condiment, it is generally used in a different state, or melted. To boiled vegetables it makes a proper, and not unwholesome addition; but, at the same time, it frequently disagrees with weak and hypochondriac stomachs.

TOBACCO.

To this head of Condiment, may perhaps be referred the use of the well known herb, tobacco. It may be said to form, properly, the condiment of the nose; and no substance became, in so short a time, so generally used as this. The introduction of it into Europe was owing to Sir Walter Raleigh. It is employed in the three different forms of *smoking*, *snuffing*, and *chewing*. The effect of all those forms of using this herb, at first, is to produce that uneasiness of head, and general relaxation of the nervous system, which attends the action of all narcotic poisons; but the effects of tobacco are more temporary, as it joins with its narcotic, something of a stimulant operation. The use, also, of no substance is found so agreeable to those who once begin it, as tobacco; and few people have fortitude enough, when once begun, to

leave the practice off. At the same time, there are many instances in which this substance has even proved a mortal poison. As it is generally introduced by degrees, so, like other narcotics, the constitution becomes accustomed to it, though our habit of taking it in certain quantities has its limits; and any excess, at times, produces the same deleterious consequences as arise from the action of powerful poisons.

Snuffing.

Snuffing is the most general form in which tobacco is used; and though it forms the basis of all snuffs, yet it is frequently mixed, in this form, with other ingredients of an aromatic or saline nature. The first effect of snuffing, when not accustomed to it, is to excite sneezing, and to promote a copious mucous discharge from the nostrils. This effect gradually diminishes, as the membrane of the nose becomes insensible to its influence. With these first effects of it, it produces some giddiness and confusion of head; and where these symptoms are considerable, their consequences extend to the system at large, and a loss of appetite and debility of stomach frequently ensue. In course of time, the same state of health is produced by the action of this substance, as attends the long continued operation of opium and wine. The action of the stomach seems to suffer, under its use, more than
any

any other part; and great snuffers are often subject to considerable pain in this organ, which can only be ascribed to this cause. From exciting a discharge of mucous from the nose, snuffing is certainly, in many cases, useful as a remedy in head-ache, in inflammation of the eyes, and in tooth-ache; and, where custom has once reconciled the constitution to its use, the same complaints are apt to ensue on giving it up.

Smoking.

Smoking is a more powerful manner of using tobacco than the former, and in this form it shews more fully its narcotic powers than in any other, as it generally excites both vomiting and purging, on the first attempt; but these effects wear off by degrees, and unless carried very far, or to excess, no other consequences arise from it than what we observed from snuffing. In the same manner, as a discharge is produced from the head by snuffing, so an increased discharge from the mouth and throat, particularly of the saliva, is the consequence of smoking. From this waste of occasions, smoking is more hurtful to the business of digestion than snuffing, and the tone of the stomach becomes much more impaired under this form of using tobacco. At the same time, as snuffing relieves the affections of the head, so smoking, from the manner in which it

is applied, often relieves spasmodic asthma, and promotes expectoration in catarrhal affections of the lungs and difficulty of breathing, depending upon a collection of phlegm on the breast. Smoking has also been considered as a remedy against contagion; but its influence here would seem to depend alone on its narcotic virtue, which, by lessening sensibility, renders the mind less active and anxious, and consequently less acted upon by the passion of fear, which is so powerful in exciting contagion.

Chewing.

Chewing, though the most nauseous form in which tobacco is used, is generally carried to greater excess than any other. By this practice, part of the impregnated saliva is carried into the stomach, and vomiting is more readily excited by this form of using it than the others. By chewing, the narcotic qualities of the tobacco are as strongly felt as by any other; and the habit of chewing being most prevalent in the lower orders of society, it becomes the most durable, and the most tenaciously kept. The effects of this form, in weakening digestion, are much greater than the two others, as it occasions a greater waste of saliva, and even a sensible emaciation of the body to be produced. In this form it is more powerful in relieving the
rheumatic

rheumatic affection of tooth-ache than in the two others.

On the whole, the habitual use of tobacco is not only disgusting, but there can be no doubt it is extremely injurious to the health. It is curious to observe, that the melancholic, and those in a state of madness, are particularly delighted with the use of this substance, even though they were never accustomed to it before they fell into their derangement.

RECAPITULATION OF THE GENERAL EFFECTS OF ANIMAL AND VEGETABLE FOOD.

From examining the structure of the human organs, it is clear nature has designed men for a mixed aliment, and that neither vegetable, nor animal food alone, is his proper nourishment.

His teeth, stomach, and intestines give evidence of this, for by the first, he appears equally a carnivorous, and graminivorous animal, by the second he approaches to the carnivorous, and by the third he shows an union of both. Choice and custom have little to do on this point; appetite will always direct what nature has fitted him for, and man in his natural state, we find no way confined to either species of aliment; but that he promiscuously uses both. Indeed there are no people who live entirely on vegetable food, without the intermixture of some articles that partake more or less of an animal nature. The Pythagorean diet, the strictest of this kind has been much celebrated in antiquity, and the most beneficial effects have been considered as arising from its use. But though this diet consisted of a free use of vegetable matter, yet some interposition of animal food

food occasionally took place, consisting of those animals of the youngest, and most tender kind. Milk and honey also formed a chief part of this regimen, and the beverage formed the strictest part of it, being confined to simple water alone.

In the East Indies where the vegetable diet is carried to the greatest length at present, it requires a most immoderate use of condiment, to render it at all fit to give a sufficient stimulus to the body, and even with this addition, and the general influence of a warm climate, the persons who rigidly adhere to it are found to be weakly, sickly, and meagre; and more subject to diseases especially bowel complaints than others. We may here enumerate the remarkable coincidence which seems to take place in the use of condiment with vegetable diet, among nations of the most distant situations and manners, and which seems pointed out as an instinct of nature to counteract its deficient stimulus on the stomach. Thus the Gentoo seasons his rice with pepper, and other strong spices to such a degree, that no European at first, can partake of his highly poignant food. In the same manner the Scots highlander eats with his oaten cake such a quantity of onion, his natural and most poignant seasoning, as gives a proper stimulus to the stomach, which also is of a more permanent nature than the stimulus of the Gentoo.

In the same way certain nations have been said to live on animal food alone. Thus the laplanders

are supported chiefly by a diet of fish. But still even there, some vegetable matter they find necessary to interpose such as their climate affords, and milk also they use sour to counteract the effects which the animal food is apt to produce.

On the whole then, man seems formed for a mixture of diet, the proportion of which must be regulated in a great degree by his relative situation, and to judge properly of this proportion we shall recapitulate the general effects, which arise from each kind of diet separately.

Animal food, there is no doubt, gives more strength to the system. It fills the vessels, increases their tension, and adds to the strength of their circulation. The fluids it produces are more dense and elastic. In fact it conveys that ultimate vigour which rather endangers the system, than is on the whole desirable; hence from the excess of its stimulus life is soon worn out by it, and one who has early used this too invigorating diet, is soon carried off by inflammatory diseases; or if working off in part its effects by exercise so as to prolong his life, such an accumulation is made of vitiated fluids, as in the last period of it to lay a foundation for the most inveterate chronic diseases.

Vegetable food again keeps the powers of life stimulated in a moderate degree. No bad effects arise from a full meal of it, and its chief inconvenience is in the production of complaints of the stomach and bowels, from the excess of acid
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produced by it. But in proportion to its weaker stimulus it is deficient in giving strength and vigour, hence it is insufficient where bodily exertion is required, which we find particularly instanced in the feeding of the ancient wrestlers, or *athletæ*, and in modern times in the different proportion of labour done by the individuals of the two nations, the English and the Scotch, the former being fed more on animal diet than the latter. The superiority of vegetable food is chiefly confirmed in mental exertion. From the use of it, it is well known, acuteness of mind and penetration proceed. Hence the attention paid to this species of food by gamesters, whose minds must be ever alive to every occurring circumstance.

From this view of the separate effects of diet, the propriety of their conjunction is indisputable, and the proportion the two species should bear to each other, must depend on three circumstances, the state of climate, the occupation of the individual, and his bodily health.

With respect to the first in warm climates, there is no doubt that a vegetable diet may be carried to great excess without much inconvenience. Indeed this is strongly pointed out by nature, as the proportion of vegetable food is there greater than in other climates, and it is also more of that particular nature which is fitted to counteract the evils which the excess of heat in such a situation produces. In the cold coun-

tries again, the proportion of animal food should exceed, as from the want of heat a greater stimulus is required for the system, and also from the smaller perspiration, and little tendency to putrefaction which the fluids discover.

In regard to the second, where there is little bodily exertion employed, much use of animal food is improper in any climate, as it will load the body, and oppress the mind; but where on the other hand bodily exercise is much employed, the use of animal food should be liberal, and even the vegetables used should be of the most nourishing or farinaceous kind. On the bodily health we may observe that there are certain diseases, to which an individual may be constitutionally subjected, that must regulate his proportion of vegetable, or animal food. Thus the gout when in the system, and not regularly formed, requires an excess of animal food to drive it to the extremities; though in some measure it aggravates the disease. In the same way, hysteric and hypochondriac complaints, from the disposition of the stomach to acescency, requires a diet of animal food, as the only means of alleviating the symptoms of these diseases. In all these cases where animal food becomes necessary in order to prevent its bad effects in excess, as much bread as possible should be conjoined with it. By this practice much benefit would accrue to invalids, which we find confirmed

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ed by the practice of the French, who in consequence of their great use of bread, and dried fruits along with their animal diet, feel none of the bad consequences which affect the English constitution.

REMARKS

REMARKS ON MEALS.

After these general observations on food and drink, it is proper to enter more particularly into the nature of modern meals. It is indeed true that the human economy is suited to a great variety of states and circumstances, and also to the same variety in respect to aliment. The nicety therefore we have shown on this subject, may by some be considered as too minute, for with most men the different effects of aliment are not very remarkable, and though excesses take place, their consequences are often transitory and unheeded. It is proper, however, that mankind should be aware, that improprieties in diet are always attended with danger, and that the repetition of these improprieties cannot fail to prove prejudicial to health. With these circumstances in view, we shall consider the nature of our different meals as commonly made at present.

Breakfast.

Breakfast among the higher ranks, and indeed in general in modern life, is confined entirely to vegetable food. This vegetable food consists chiefly of bread and diluent liquors of a narcotic nature, as tea and coffee. An excessive use of
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this kind of beverage, and especially at this time of the day when its effects are more powerful, cannot fail to be highly injurious. Its use therefore should be moderated as much as possible, and the bohea kind also should be preferred to the green. Tea and its hurtful effects are to be farther counteracted by a considerable portion of cream and sugar. Aromatic herbs have been proposed as substitutes to tea. In point of injury to the stomach in the end there is little difference between them, and they are by no means such an agreeable beverage. The same objection occurs to coffee as to tea in its sedative qualities, which should be counteracted in the same manner by the addition of cream and sugar. Chocolate is preferable to either tea or coffee where the stomach readily digests it, and from its somewhat oily and indigestible quality, it should be used very weak till the stomach is reconciled to it, and then it will generally set easy. Milk is, no doubt, preferable as an alimentary liquor for breakfast to any other, but with many stomachs it disagrees from its tendency to coagulate. As there is generally in this case a tendency to acidity in the stomach, it may be taken with a little chalk or magnesia, which will correct this effect.

With respect to bread at this meal, it should be used stale and toasted, or used in the form of biscuit. With tea and coffee the addition of butter is proper, as checking the acid fermentation
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which diluent liquors often produce, and the butter is always best if it has a little salt mixed with it; the addition of butter however is unnecessary to either chocolate or milk.

Dinner.

This being the chief meal, less restriction is generally thought necessary in it than in any other, and the chief attention to be paid, is to what kind of food suits the constitution. Where the constitution is weakly and liable to stomach complaints and acidity, the most alkalescent meats are proper, and that form of meat by which their nutrition is most concentrated. Hence roasted meat is preferable to boiled in such stomachs, flatulent food should be also avoided. The proportion therefore of vegetable food should be small, and that of the most farinaceous kind. Where the constitution is strong, and the stomach vigorous and active, no restriction of any sort is necessary. The observations already thrown out will be sufficient to direct every one in the choice, and the chief point is to avoid excess. On the subject of drink, it is only necessary to observe that in weak stomachs, if a greater degree of stimulus is necessary by a choice of food, so the same stimulus is also necessary in the choice of drink. Wine, though the best beverage for invalids, often turns sour on the stomach, and in this case malt liquor, particularly porter, has been sometimes known to agree.

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But where this also fails, and fermented liquors of all kinds give uneasiness, recourse must be had to ardent spirits weakly diluted, and the choice of the kind must be regulated by the taste of the person. The chief point is to have them old, and free from adulteration. To the robust and active little can be offered on this head, taste and inclination will regulate his conduct in the proportion and kind of his beverage, and the advice of the physician will be only regarded when the attacks arising from impropriety, renders it necessary.

Supper.

This meal, from the late hour of dinner, is generally given up. Some slight repast, however, is always prepared, and it should consist chiefly of milk and vegetables with those in health. In cases of invalids, however, it is sometimes proper to render it more solid, and to such, a few oysters or shell fish, will afford more proper nutriment.

Intermediate Meals.

Where dinner is protracted to a very late hour, an intermediate meal, or lunch, between it and breakfast becomes proper. This lunch should no doubt be slight, but it is particularly proper for invalids. The stomach becomes oppressed by taking too great a portion of food at dinner from the long fast, and the fever of digestion is rendered

dered slighter and not so hurtful to the body. The lunch should generally consist of light soup and toasted bread.

The afternoon practice of drinking tea or coffee, is more sanctioned by custom than real utility. The continuance of this habit, therefore, must depend on the effects it seems to produce; and wherever in cases of invalids it seems manifestly hurtful, it should be laid aside.

DIET PROPER FOR DIFFERENT PERIODS AND CONDITIONS OF LIFE.

In the course of the preceding observations on particular parts of diet, we have been led to consider the propriety of its use in certain states of body, we shall now enter upon a more full detail of this subject, as tending much to direct our conduct in regard to diet through life.

Diet of Infancy.

The foundation of health is clearly laid down in the period of infancy, and the strength of this foundation must depend much on the nourishment then employed. Milk, we have already noticed as the most suitable aliment for this stage of life. It is pointed out by the hand of nature, and every animal is furnished with a liberal supply of it for the support of their young. This secretion, however, we find liable to considerable variety from circumstances in the conduct of the parent, and from being a mild and innoxious fluid, it becomes often the bane of health, and proves the source of disease. This is particularly the case in civilized life, as its supply is not always granted by the parent, and even animals of a different species are at times resorted to,

to, in rearing the young of the human subject. On this account the use of milk both requires limitations, and where used it even stands in need of certain corrections. Thus in many case it would seem that the curdy part in human milk is greater than it should be, and that in consequence from the greater separation of coagulum, digestion is in some degree suspended, and the fluid is rendered unfit for answering the purpose designed. In other cases the gastric fluid, though in health slightly acid, acquires, in consequence of fever, or the weakening powers of the stomach, a morbid acidity which it communicates to the milk, and renders it unfit for the purpose of nourishment. Thus, wherever milk seems to disagree, and the nourishment of the child appears incomplete, we should carefully examine whether this arises from a faulty secretion in the fluid drawn from the mother, or from the impaired state of the organs of the child. The first may be judged of, by examining the milk, and investigating the proportion of the principles contained in it, which may be corrected where different by the regulation of the nurses diet. The second, when ascertained, which is chiefly by the sour evacuations by stools, may be obviated by the use of alkalis and absorbents, in a proper quantity. The period when additional nourishment is required, should be properly regulated by the period when the wants of the child seem to demand it, and the appearance

ance of the teeth is certainly the proper indication for this additional supply. But this intimation is generally anticipated. At the end of the first month a little boiled bread is added to the natural nourishment, which by the boiling has its acescency corrected. This additional supply should only be given once a day, and no animal food should be allowed. Where circumstances do not admit rearing the child by the mother or nurse, and bringing up by the hand takes place, the milk of those animals commonly employed should as nearly resemble the human milk as possible. To render it more animalized and deprive it of acescency, a small mixture of a light animal jelly, as veal tea, should be added, and to increase its saccharine quality, the characteristic of human milk, some sugar should be also joined with it. It should be previously boiled, and given in a lukewarm state.

No child should be allowed a proportion of animal food, except when brought up by the hand, till after the period of weaning. The exact period of this change must be regulated by circumstances, nature however in doing it should be our guide, and extremes avoided. From the tenth to the twelfth month is certainly the most proper period.

Diet of Childhood and Youth.

The diet of children and young people should consist greatly of diluents, in order to facilitate
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progress of growth. Hence broths, and a large proportion of vegetables, are the most suitable nourishment. Milk, also, is a proper part of diet, and it should be used in every form during this stage of life. In point of drink, water is the best, and should be almost the sole beverage. Condiment of all kinds should be avoided; and nothing should be taken that can, by stimulating the system, induce a too early maturity before the constitution is ripened for it by years.

Diet of Manhood.

With complete adolescence the quantity of food necessary for the period of growth should be abridged; but, from the more active scenes of life in which the body is then engaged, the food should be of a more stimulating nature, and a proper proportion of animal food interposed. This proportion, however, must be regulated by various circumstances.

Thus those who pursue a sedentary and studious mode of life, should be more sparing in the use of animal food and stimulent drink; for by excess of nourishment to the body, the intellects are found proportionably weakened. Those of a firm and vigorous habit possess a strong disposition to inflammatory diseases; excesses, therefore, should be particularly avoided by them, especially in the use of fermented drinks. Where the constitution, again, is delicate and irritable, a diet moderately stimulating is most suitable

suitable to preserve health, and a very sparing use of fermented liquors should take place. Those who are naturally sanguine, should confine their diet chiefly to vegetable food, and their drink simply to water, without any impregnation. The phlegmatic habit admits a greater latitude in the use of stimulent diet than any other; and both condiment and stimulent drink will be less hurtful here than in any other texture of body; the chief point is to guard against too great corpulency. Where a dry habit prevails, young meat, with fruits, and acescent vegetables, form the most proper regimen; and, in point of drink, the smaller wines will be most eligible.

On the subject of drinks, temperance is, at all periods of life, necessary. Where used, they are no doubt best suited to cold climates, and it is generally there that excess in the use of them prevails. In the warm climates, a temporary use of them may be at times necessary; but the practice should never be indulged in, or carried far.

Diet of Age.

The diet of age, or after fifty-five, should return in some degree to that of the early periods of life. The proportion of solid food should be diminished, and a return should be made to that mode of living which we formerly recommended to be pursued in youth. Thus
broths

broths and liquid food should be greatly employed. All the nourishment, too, should be of the most digestible kind; and a moderate proportion of condiment will best suit this period of life, when the appetite becomes more languid, and the springs of the machine less strong to perform the operations required. In regard to drink, fermented liquor, especially the use of wine, is most allowable at this period; for the vital powers require in some degree to be supported, and the languid action of the system to be kept up.

OF THE INFLUENCE OF DIET ON THE
DISCHARGES OF THE BODY.

Having now fully pursued the subject of aliment, and traced its general effects on the body, it remains to consider the last part of the operation, or its discharge from the system, in its variously changed and assimilated states.

The different discharges from the body possess a material influence on the health; and they differ somewhat in most individuals, either in respect to their quantity or their period of duration.

The first and principal discharge is that from the alimentary canal, or by stool, by which is removed the thick feculent remains of the food. This discharge should regularly take place once a day, and for this purpose a habit should be established of bringing it on by custom at a certain hour, and the diet should be regulated to assist this. The consequences of retention are highly disagreeable; they consist in general uneasiness of the stomach and bowels, communicating the same unpleasant state to the nervous system, and producing in time symptoms of actual disease.

The period when digestion takes place varies, no doubt, with different substances. Thus
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milk passes into the bowels in a very short space of time; recent vegetables are next in their progress; bread is digested in four hours; fish of different kinds in five; and meat in six or seven. From these observations, the progress of digestion intimates that a regular discharge of the accumulated refuse of the aliment should daily take place; and where it does not, or where a natural slowness of the bowels prevails, the diet should be studied of an emollient and relaxing kind. Thus emollient vegetables and fruits should make a great part of diet. The bread should be prepared by the acescent fermentation, and the drink should be of a mild and opening nature, as malt liquors of a sweet kind with little proportion of hop, whey, cyder, perry, &c. Where this slow state of belly is the effect of constitutional weakness, an opposite regimen, in order to give power to the bowels, will be proper. Strengthening aliment is then to be employed to give vigour to the intestines, and drink of a stimulent nature had recourse to.

The appearance of this discharge generally bears some reference to the aliment taken. Where much stimulent drink is used, and the person is subjected to long fasting and much labour, the fæces acquire a very hardened state, as the action of the absorbents is exerted to take up every part of them that will pass into chyle. Where more food again is taken than the stomach can digest, a loose state of bowels is the natural consequence,

sequence, and the discharge takes place in a crude and unassimilated form. This evacuation in its consistence should neither be too liquid, nor too dry, and its appearance enables us to form a judgment of the state of the digestive powers, and of the quantity of food we employ. The great rule is to take no more aliment than what we can easily digest. Wherever the bowels are weak the food acquiring an acrimony is apt to be thrown off without nourishing the body. This state of habit requires particular attention, both in the choice and mixture of the different kinds of food we use.

Though once a day is the proper medium of this evacuation, yet many have it twice a day, and others only once in two days. In the early period of life this discharge is always most frequent, and as age advances this frequency gradually lessens. Much also depends on the state of the other discharges, particularly the skin, and in summer, when the discharge by the skin is greatest, that by the bowels is less, and the robust and muscular, from their less evacuation by the skin, are more subject to costiveness than the weak and enervate; the diet therefore, to promote this discharge should consist much of the vegetable kind; and a due proportion of drink should be conjoined with it, of a diluent and softening nature. Where on the other hand too lax a state prevails, the use of vegetable food should be diminished in the same

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proportion,

proportion, and the quantity of drink should be barely sufficient to admit the dilution of the food, and it should be also of an invigorating nature.

Next to the discharge by the alimentary canal, is that by urine. The appearance of this discharge varies from a variety of circumstances, and its quantity, though it always takes place oftener than once in a day, is subjected to the same variety. It is less in warm climates than in cold, and it is greater in winter than in summer. No discharge has been more attended to, and no discharge is more apt to mislead in regard to the real state of health. After much weak drink we find it of a whitish color. After too small a proportion of drink, or the use of ardent spirits it acquires a red colour. When the stomach and first passages are loaded with impurities, it yields what is termed a lateritious, or brick-dust sediment. Thus from the colour of the urine, or from its paleness, or otherwise, the state of the body may be determined to be more or less vigorous. This discharge, from retention in the bladder, or from the use of improper beverage, or articles of food, becomes of an acrid, corrosive nature, producing various degrees of uneasiness in the bladder. The qualities in the food producing this effect, are generally an excess of acidity; hence malt liquors, and all food of an austere, and too acerb nature, is apt to produce such an effect.

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This evacuation is more copious during the night than the day; and in warm weather than in cold. It is also less, during the time of meals, and becomes increased as the powers of digestion are exerted. The greater the proportion of diluents we use in diet, the more copious will this discharge be found. Hence in order to check it where it is too great and attended with weakening effects, food of a solid and oily consistence should be had recourse to. Thus the perspiration becomes considerably lessened, if not obstructed, by food of difficult digestion; and whatever oppresses the stomach, has a material influence on the state of this discharge. Hence food of easy assimilation produces a lightness of feeling, and a free emanation of this discharge. The quantity of this discharge should always bear a proportion to that of the liquid we take, and to the degree of perspiration. Whenever it is deficient, diluents should be had recourse to, and those vegetables formerly taken notice of as possessing diuretic virtues; but no attempt should in general be made to urge this discharge too often, neither should it be retained where an inclination to void it occurs.

The next discharge, or that by the skin, is more extensive than the two former; and it seems in a particular manner to have a strong influence on the nervous system, and to regulate our general temper and feelings by its state, independent altogether of disease.

The quantity of this discharge, though various, has been rated at, from 4, to 5lb. every 24 hours, and the quantity is a proof that the different excretions are properly performed. On this subject it is properly observed by some physicians, that in robust persons the remains of their nourishment are chiefly discharged by perspiration, while in the weak, it takes place more commonly by the kidneys, or bowels, and on this remark much practical utility is founded, in regard to the propriety of particular kinds of diet, suited to the particular individual state.

With respect to the other discharges, as they have less influence on the state of health, and as they are not so immediately affected by particular diet, a consideration of them does not enter into our present review. The three great discharges by the bowels, kidneys, and skin, are *immediately* affected by what we eat and drink, and their evacuation is either increased, or diminished.

On the whole, then, the state of the stomach is of the first importance, as determining the general health of the economy. It is the centinel of the body that on all occasions gives the alarm, and by its disagreeable feelings warns us of our own impropriety, both in the quantity and quality of what we eat and drink. The admonitions, therefore of this monitor, are always just, and when they are disregarded by the individual

dividual serious consequences in the end generally ensue.

Combinations of Food.

As the ease of the stomach requires so much attention for a proper digestion, and consequently for the preservation of health, the mixture of aliment we take should in its proportions and kind be particularly suited to favor this.

In making such mixture every person knows, certain articles will more readily combine together than others.

Thus in regard to food, bread is a proper and useful mixture with all kinds of animal diet. It occasions a proper quantity of saliva to be given out, and carried into the stomach, and it is supposed that a pound well chewed, brings along with it by the action of mastication, nearly an equal quantity of this liquor. Hence the digestibility of solid foods may be often rated by the quantity of saliva they elicit in their passage to the stomach.

Roots also are properly conjoined with animal food, but they should not be used in the same proportion as bread, for they are generally more flatulent, and dispose more to acescency.

The same observation applies to a mixture of herbs, though proper with animal food in a certain degree to correct putrescency, they should never form a principal part of the mixture at any meal.

In regard to fish, the use of oil, or butter, is in all cases reckoned a proper addition, and wherever mixtures of food seem not of a proper incorporation, they should be cautiously avoided. A strong stomach, indeed, will digest any food, however insoluble its nature, or improper its combination; but to those whose digestion is weak, whose life is sedentary, and inactive, and particularly if they stand among the class of invalids, this subject is of the first importance for their attention. The rules upon it might be considerably enlarged, but by applying the observations detailed in the preceding part, upon particular kinds of food and drink, every one will be able to judge for himself of the propriety of certain mixtures, and his own experience will enforce this propriety with more conviction than any precepts can pretend to.

Of the Temperature of Food.

The degree of temperature in which food should be used, is a subject that ought not to be omitted, in offering rules for diet. This must no doubt be regulated by the three leading circumstances of the state of the season, the nature of the food, and the health of the organ that receives it.

All animals, in their natural state, take their food cold, or in that temperature in which nature presents it to them; and in this state it is certainly most permanently nourishing, and pos-
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esses qualities which are lost by its change of temperature. The first taste of warm food has been known to give a savage the most uneasy sensations ; but the same feeling which has rendered a covering necessary for the body, to guard it against the effects of the atmosphere, calls equally for a change in the temperature of what we introduce into the system.

In warm climates, or in the summer season, the propriety of food of a diminished temperature, is clearly pointed out as necessary to give the stomach that degree of stimulus or vigour which the excess of the surrounding heat takes away. Hence the desire for cold liquors, and the large use of acids and fruits, which prevails in such situations. In a cold climate, again, the stomach requires no such stimulus; and where food is used of a hot or increased temperature, it is more with a view of promoting perspiration, than as absolutely necessary for the assistance of digestion.

The nature of the food is also a point of much importance. All solid and indigestible food should be taken warm, as its increased temperature facilitates solution; and, by the same reasoning, all foods of a succulent and easily digestible nature should be taken in a different state.

The health of the organ must also regulate the proper temperature. In strong stomachs,

an increased temperature produces too active a stimulus, and occasions both the digestion and discharges, consequent upon it, too rapidly to take place. In weak stomachs, a moderate temperature is necessary. Cold food does not give the necessary stimulus to digestion, and food too warm relaxes and enervates. The best rule in determining the exact temperature of food, is for the person to be regulated by his own feelings---the stomach will best tell the exact degree which is proper, by the ease and facility with which its functions are performed.

DIVISION IV.

DIETETIC CHEMISTRY, OR THE PRINCIPLES OF DIET AND COOKERY.

I.

BY dietetic chemistry is meant a knowledge of the component parts of all those vegetable and animal substances received into the body, under the appellation of food and drink, with an explanation of the manner of preparing them, where it is necessary, in order to fit them for this purpose.

II.

The first consideration of them has only received the name of chemistry, the second is commonly distinguished by that of cookery.

III.

The general property required in such substances, is their capability of conversion into the animal nature, or *animal mixt*; and with the view of ascertaining this capability, it is necessary to examine, first, of what parts the *animal mixt* is composed.

IV.

I. PRINCIPLES OF THE ANIMAL COMPOSITION.

The *animal mixt* we find exist both in a fluid, and solid form. The fluid appears in its perfect

state in the general circulation, and may be considered as the primary principle of all animal matters; when first drawn from the body, it shows a uniform consistence, has a red colour, and a saline, or slightly ferruginous taste. On standing some time it coagulates when this uniformity disappears, and it separates into a greenish yellow liquid, called serum, and a clot or coagulum reddened by the presence of iron.

V.

Both these when fully submitted to examination, may be resolved into three general principles, or constituent parts distinguished by chemists under the names of *albumen*, *gelatin*, and *fibrin*; the *albumen* being the first stage of animalization, the *gelatin* the second, and the *fibrin* the third, or that which differs only from the perfect solid in its more attenuated state; and to these parts may be added, perhaps, a fourth, the base of solidity, or a portion of phosphoric earth, to a disposition of which the fibrin ultimately tends.

VI.

The *albumen*, or primary animal substance, before being changed by organization appears to contain a considerable portion of saline matter, and little earth. As it changes by the action of the vital principle, and becomes condensed, its saline part diminishes, and its earthy part becomes, by the energy of the system, increased.

VII. The

VII.

The *gelatin*, or intermediate animal substance, has in general no smell. It can even be artificially produced from the albumen, by the solution of the latter in acids. It is insipid to the taste; it exists in various states of tenacity and viscosity, from mucilage to that of glue. It is the source of elasticity and flexibility, and also of the putrescibility of various parts.

IX.

From this view, then, the solid part of the *animal mixt*, or *fibrin*, as being formed from the blood, can only differ from it in the proportion of these principles or constituent parts enumerated. It chiefly displays what chemists have termed a mucous extractive substance, which may be considered as a combination of albumen and gelatin, or the former passing into the latter state, and that state progressively augmenting in consistence. Thus while the albumen is most abundant in the fluids, the gelatin and febrin observe the same proportion in the solids; and, in the bones, the accumulation of the earthy parts, consisting of phosphoric compound, are in the same degree.

X.

The preparation of these principles of the *animal mixt*, depends on an original animalizing solvent applied to them, or the *gastric secretion*.

secretion. By this solvent, the substances received into the stomach, or coming within its operation, acquire their primary change, or are converted into chyle, the preparatory state of the albumen.

XI.

Gastric Liquors.

This solvent, or the gastric liquor, we find a fluid of a transparent yellow appearance, and of a saline and bitter taste; but this taste varies in different animals, for in some it is perceived acid, in others somewhat insipid, and in others of an alkaline nature. It is much influenced, it would seem, by the nature of the aliment; and from the same cause it is also different in its chemical properties. In every animal, however, it seems to act best on that species of food which appears by nature designed for them. Thus in carnivorous animals it proves a weak solvent to vegetable matter, while in the graminivorous animal, food is by it digested with difficulty. Whatever, then, its peculiar nature may be, it is found by experiment that it acts entirely as a solvent, and by its chemical power alone. This is established by its being equally powerful out of the body as in the stomach, and, in order to its action, by none of the phænomena of fermentation properly ensuing.

XII.

The action of this solvent in the human subject, seems assisted by heat and solution. The
degree

degree of heat favoring digestion may be considered as that of the body itself, or digestive organ, joined with the farther acquired heat of the substance often introduced from the effect of cookery, amounting together to a considerable degree. The degree of solution, again, is not so easily ascertained, and varies in different persons, according to the inclination and taste for drink; but a certain quantity is employed and found necessary at all times, and is even supplied by the process of mastication.

XIII.

The effect of this solvent, then, is digestion, or the production of chyle, a white milky liquor.

The time required to form chyle is regulated by various circumstances. It is generally found to take place in health in three or four hours, for then the appetite for food returns, which shews that the former meal has been assimilated.

The time necessary for the passing of the chyle into albumen, and the other subsequent changes it undergoes to the state of fibrin, it is difficult to determine. It will be much regulated by the strength and power of the organs; and the kind of nourishment, also, will have some influence.

XIV.

In this way, then, the animal system comes to be repaired; but along with its repair it receives also the seeds of dissolution; and a variety of saline matters are both introduced along with
the

the original aliment, forming part of its composition, and are also generated in the body, which, by their power upon the animal fibre, first assist the operations of the œconomy, and then, by their peculiar compounds, ultimately conduct it to decay.

XV.

The principles, which are found in all animal substances, are,

1st. *Oxygen*, which is the principle of heat, and which combining with certain bases, forms the various saline matters.

2d. *Hydrogene*, which is the principle of water; and being produced by the resolution of animal and vegetable substances, enters largely into the articles of nourishment.

3d. *Nitrogene*, or the principle of atmospheric air; which acts powerfully on the body, and also on the articles taken into it.

XVI.

By these principles, then, in combination with the nourishment, or otherwise introduced into the system, and mixing with the fluid and solid parts, the various saline compounds are formed, or rather evolved for different purposes; and, by subjecting animal matters to chemical experiment, the nature of them has been fully ascertained; and the result of these experiments has been, that the peculiar and sole characteristic of animal matter depends on the presence of *azote*,
variously

variously arranged and modified by peculiar circumstances.

XVII.

But though the existence of these substances has been ascertained, yet their uses in the œconomy, and also the exact proportions they should bear, we are by no means acquainted with. Hence, in the present imperfect state of our knowledge, our chief object must be directed to the principles of nourishment which the system requires, in order to supply the continual waste that is taking place.

XVIII.

Principles of Nourishment in Vegetables.

The principles of nourishment, though differing somewhat in vegetable and animal matter, are all derived from a vegetable origin; and, analyzing vegetable substances for this purpose alone, we find all these principles to reside in a mucilage, an oil, sugar, and gluten, each of which we shall therefore detail.

XIX.

The mucilage of vegetables is an agglutinating, viscous, insipid matter, which exists in most seeds and young plants in so great a proportion that they are almost resolvable into it. It is either alone, as in mallows, linseed, &c. or at other times it is united with sugar, or else with oil; its chief characters are insipidity, solubility in an aqueous fluid, the emission of carbonic

bonic acid when exposed to the action of fire, and a tendency to the acid fermentation in a state of watery dilution.

XX.

Oil is an unctuous, thick, sweet, inodorous fluid, the principle of which is the same in all the different kinds, though it is occasionally combined with mucilage or aroma; it is chiefly obtained from seeds or kernels.

XXI.

Sugar is an essential salt of a peculiar nature, sapid and agreeable to the taste. It is extracted from a number of plants. It is chiefly, however, combined with other matters, particularly with mucilage, that it forms a principle of nourishment.

XXII.

Gluten is an elastic, ductile body, and may be considered as a vegetable animal substance, from its properties resembling animal substances; it chiefly resides in graminious vegetables; it emits a very characteristic smell, its taste is insipid, and it has much resemblance to glue.

XXIII.

These four substances detailed constitute the nourishing principle of vegetables; and in proportion to the quantity in which they are present, is every vegetable substance fitted for aliment, or for conveying nourishment to the system.

XXIV. The

XXIV.

The first class of vegetables, or the farinaceous seeds, contain these principles in the greatest abundance.

The grains, however, predominate in the proportion of their saccharine principle; the pulses exceed in the proportion of their oil; and the oily nuts exceed even the pulses in the quantity of their predominant principle.

The second class of vegetables, or the roots, possess more of the amylaceous principle than any other; and next to this, also, a proportion of saccharine matter.

The third class, or the herbs, contain the amylaceous principle alone, with much water in their composition.

The fourth class, or the fruits, display a predominance of the saccharine matter in their texture, blended more or less with acidity.

The farinaceous fruits, or what we have termed so, differ from the former in containing a greater proportion of the mucilaginous than the saccharine principle.

XXV.

Principles of Nourishment in Animals.

The nourishing principle in animal matter is found to be much the same as in vegetable; and it is resolvable into mucilage or jelly, oil or fat, and gluten. The proportion, however, of these,
is

is much greater in animal than in vegetable matter.

The first class of animals, or quadrupeds, possess the greatest proportion of the oily principle, or fat.

The second class, or fowls, possess more of the mucilaginous or gelatinous principle than the oily.---Eggs are both gelatinous and oily.

The third, or fish, excel in the proportion of the glutinous principle.

XXVI.

MILK

Is an animal fluid, holding in solution an oil, sugar, gluten or coagulum, with a proportion of water. The first appears separate in butter, the second in whey, and the third in curd and cheese.

XXVII.

FUNGIOUS ALIMENT

Is distinguished by its chiefly possessing the glutinous principle and a proportion of oil.

XXVIII.

DRINK.

Drinks are divided into water and fermented liquors.

XXIX.

Water is a pellucid, colourless fluid, without taste or smell, holding in it a small proportion of fixed air.

xxx. Fermented

XXX.

Fermented liquors are water impregnated with vegetable matters, by means of fermentation. Where the saccharine principle predominates in vegetable matter, the product of this fermentation is wine.

Wine then consists of water, holding in it a proportion of spirit, acid, and sugar.

Where the saccharine principle is evolved from flour or grain, instead of fruit, the product is malt liquor.

Malt liquor then is water, containing in it a portion of spirit and of mucilage, or gluten.

The product of these watery impregnations, when submitted to distillation, is brandy, or a colourless fluid, slightly opaque and milky, of a hot and penetrating taste, and a strong, agreeable smell.

XXXI.

II. PREPARATION OF FOOD, OR COOKERY.

The art of cookery is a branch of chemistry highly useful for the preparation of our food, but by the refinements of luxury it is rendered often injurious to the health, where improperly employed. Its modern improvements consist chiefly in giving a stimulus and poignancy to every dish it prepares, and in depriving our food, in a certain degree, in consequence of this preparation, of part of its nourishing qualities. From this circumstance,

circumstance, most articles we take are composed of a hot sapid nature,* and instead of solely conveying nourishment and renovation, the intention of their use, they increase irritation, and consume the principle of existence. Hence the taking of every meal is the production of fever, and the consumption of fever is the consumption of life. This effect is even aggravated by the quantity also we are tempted to take. The palate allured by the satisfaction it feels, proves regardless of the intimations of the stomach, and is only satisfied when it finds no longer room.

XXXII.

Cookery is divided properly into two kinds, the *professional* and *domestic*. By the former is meant the preparation of those kinds of food, and drink which are appropriated to particular trades, and conducted on a large scale, as baking, brewing, &c. the detail of which does not enter into our present review. By the latter is intended that *private* or *culinary* preparation which every family finds necessary in composing food for itself. The principles of this art we are only to examine here.

XXXIII.

The preparation of food is peculiar to man, for all other animals take it as presented by the hand of nature, and this preparation consists in the application to it of the powers of chemistry, viz. *heat* and *mixture* in various ways.

XXXIV.

1st. HEAT.

(a) *Vegetables.*

Vegetables differ from animals as being oftner used as food in a raw state, and in this state they might perhaps always be used. General consent, however, has preferred the greater number of them being altered by heat, and the advantages attending its application, are---

1st. Their being rendered more soluble by it on the stomach.

2dly. Their volatile and noxious parts being dissipated, and---

3dly. Their fixed air being evolved or extricated, and of course their flatulence and tendency to fermentation checked.

XXXV.

Most vegetables are prepared, or taken for use, in their fresh and most recent state, and the application of heat is made to them, either by *vapour* or by *simply boiling*.

XXXVI.

The former method is preferable in all cases where the vegetables are of a watery succulent nature, and by this method their colour is also more fully preserved.

The

The latter, or *boiling*, is best where the vegetable is of a dry, mealy, or a farinaceous consistence; and the proper rule in conducting this process, is to carry it so far as to reduce the substance to its softest, or its most succulent state. Hence in boiling vegetables, particularly the firm and dense kinds, cooks generally err in this respect by boiling them too little.

XXXVII.

(b) *Animals.*

Few animals are used as food in their natural or raw-state, except some kind of shell fish. Different also from vegetables, animals require to be kept for some time, or the putrefactive process to be somewhat advanced, before being used. The exact time depends on the nature of the animal, or the degree of density in its fibres; on the period of the season, and on the particular taste of the person.

XXXVIII.

With respect to the first of these, the flesh of old animals require to be longer kept than that of young ones, and also the flesh of lean animals requires to be longer kept than that of fat ones. In regard to the second, the heat of the season, if extreme, will often induce putrefaction in 24 hours; at other time, or in winter, meat may be kept almost as many days.

On the third, we may observe that many persons

ons discover a peculiar taste in the keeping of meat, and only relish it when actual putrefaction has begun in it; while, in the other extreme, and which indeed is a more general taste, many cannot relish meat if the smallest taint is discovered in it. On this point a proper medium is to be observed.

Putrefaction to a certain degree facilitates the solution of food in the stomach, and at the same time does not hurt its nourishing quality. Putrefaction carried too far, renders meat unwholesome, and increases the natural tendency of the animal fluids to that state, which both induces disease itself, and renders it also more violent should it accidentally occur.

XXXIX.

Heat is applied to animals either in a humid or dry form.

The first comprehends boiling and stewing.

The second, roasting, broiling, frying, and baking.

XL.

Boiling.

Boiling consists in subjecting the food to the joint effect of heat and moisture, so that the former part of its texture becomes softened, and the gelatinous substance of it is extricated. To produce the first effect, a length of time is required in proportion to its firmness and density. To extract gelatinous matter, the time required depends

depends entirely on the nature of the meats, the jelly of young animals being soon extracted; and the degree of boiling therefore must be regulated by the particular preparation intended. Thus moderate boiling both renders the food more soluble, and does not at the same time destroy its nutritious quality. Excessive boiling injures both; it extracts every thing soluble, and conveys abundantly to the liquor the nutritious parts, but renders the meat itself, left behind, insipid, dense, and unfit for nourishment.

XLI.

Stewing.

Stewing consists in a more moderate application of heat than boiling, and in the continuing the application of it also for a much longer time. By this mode the texture of the meat is rendered more tender, its soluble parts are not fully extracted, and it is left in a state sufficiently sapid and nourishing, while the soup also, or fluid, contains a sufficient proportion of the animal extract.

XLII.

Digesting.

Digesting consists in the uniting the effects of the two processes of boiling and stewing. It is performed in a close vessel, and resembles boiling, in the heat being carried to the same degree,

degree, or the boiling point, while from the closeness of the vessel, no part of its contents are allowed to escape, and thus the advantages of stewing are procured. By this means the solution of the meat becomes even more complete than is effected by boiling, while at the same time from the full retention of all its parts, its proper tenderness and sapidity are retained. In preparing for digesting, therefore, no more liquor should be employed than is sufficient for the purpose intended, as none of it is lost or dissipated in the process.

XLIII.

The application of heat to animal food in the dry form, or without its solution in any fluid, is performed either in the open air, or by covering it in a close vessel.

XLIV.

Roasting.

Roasting is the most common process in the dry form of preparing animal food. It requires a greater degree of heat than in boiling it, and the heat at the same time must be equally employed. The exhalation by this process from the meat is chiefly of a watery kind, and as large parts of meat are most frequently subjected to this operation, this exhalation is chiefly confined to the external parts, and does not penetrate far, from the natural condensing of the outer surface, which

is most exposed. To prevent, however, too copious an exhalation in this case, it is common to continue the frequent application upon it of an oily matter, which counteracts the effects of the fire till the whole substance is penetrated by the heat, and rendered sufficiently tender. From this view the general principles of roasting will easily appear, and their application to particular circumstances may be easily made.

XLV.

Broiling.

Broiling consists in exposing meat to the near application of a naked fire, by which means its outer surface immediately hardens before the heat has penetrated the whole. An excess of exhalation from it is thus prevented, and the meat when done, is rendered sufficiently tender. This form of preparation is best suited to those kinds of meat which are intended to be eaten rare.

XLVI.

Frying.

Frying is performed by cutting meat into thin slices, and laying it in a vessel which is interposed between it and the naked fire; at the same time, to prevent the lower surface of the meat from being too much hardened, some fluid matter is also introduced. This fluid, if an oily matter, which it commonly is, acquires from the burning an empyreumatic taste, and becomes hardly
miscible

miscible with the fluids in the stomach. On this account, frying is a process that renders meat more indigestible than any other.

XLVII.

Combined Preparation.

Frying and stewing are a mode of preparation frequently conjoined, the meat being first subjected to a slow solution, and its texture rendered tender by stewing, and afterwards being somewhat hardened and rendered more palatable by the operation of frying.

XLVIII.

Baking.

Baking consists in the application of heat to meat in a dry form, but in a covered vessel, instead of its being exposed to the open air. This cover is generally of paste, by which any considerable exhalation is prevented, and thus by the retention of all its juices the meat is rendered more sapid and tender. Nor is any thing exhausted from it but the extraction of its air, which necessarily follows the application of heat.

XLIX.

General Conclusion.

On the whole of these culinary processes it may be observed, that in roasting, a greater degree of heat is necessary than in boiling; and in boiling, a greater degree than in stewing.

This proceeds from roasting being performed in the air, and part of the heat being always, of course, dissipated, as the operation goes on. In boiling again, the heat being retained, a less degree of it becomes necessary; while stewing requires still less from the closeness of the vessel, no part of the heat being allowed to escape.

The effects of roasting are to dissipate less of the nutritious qualities of the meat than boiling; though by boiling it is more diluted, it is lighter, and easier of digestion. Roasting is therefore preferable for young and tender food, while boiling is more suited to the strong and adult. Roasting also, to be perfect, should be conducted in a gradual manner, and the heat moderately applied; for, if too violent, the fluid part becomes too much dissipated, and exsiccation rather than roasting takes place.

The effects of boiling again are much influenced by the qualities of the water or fluid. Thus mutton boiled in hard water, is more tender and juicy than in soft water; while pulse boiled in sea water, grows harder and more insoluble.

All animal food is most nutritious when least done, whatever process is employed.

L.

2nd. *Mixture.*

Mixture, the second part of cookery, is more complex in its application than the former, and also for the most part conjoined with it. It is
at

at the same time employed with various intentions.

The various intentions of this division of cookery are---

1st. To preserve vegetable and animal substances from putrefaction, as in the operations of salting, drying, pickling, and preserving.

2dly. To obviate the dryness of food, or increase its relish to the palate, as in the use of seasoning and sauces, and---

3dly. To correct the noxious quality of some kinds of food where flatulence and acidity prevail.

LI.

Salting.

Salting, or curing of food, is confined chiefly to animal food, and is executed by the application to it of three substances, sea salt, nitre, and sugar, in various proportions.

For this purpose this combination requires to be applied to animal substances in large proportions, so that they may be incorporated with it, and the combination not washed out before the animal food is used.

The most proper kinds of animal food for being salted, are those that possess a large proportion of oil or fat in their composition; and, before being used in their salted state, pressure should be applied to them, so as to separate a

part of the impregnation they have received, and to blend more intimately the oily and lean parts of their texture together.

LII.

Drying.

Drying is a process equally applied to vegetable and animal substances.

In vegetable substances it is performed by a slow and gradual application of heat, or else entirely by exposure to the air, and in this way the colour and qualities of vegetables are preserved.

In animal food it is chiefly performed by a strong application of heat, and that to substances previously salted. In this case another addition is also generally made by smoking them at the same time with the fumes of juniper or other woods.

Fish are chiefly dried by exposure to the sun and air.

LIII.

Pickling.

Pickling is performed by the use of vinegar and aromatics. It is applied both to animal and vegetable substances, but chiefly to the latter.

Applied to animal substances, they are hardly ever so much impregnated with it as either to render them less digestible, or less nutritious, while a tendency to putrefaction is in some degree corrected by it.

Applied

Applied to vegetable substances, as they are generally boiled, or much soaked with it, and are also of a more porous texture than animal matters, their volatile and active parts become entirely dissipated, and the peculiar qualities they originally possess hardly ever remain. Pickles therefore may be considered as so many sponges containing vinegar, and their poignancy and flavour are increased by the aromatics blended with them. To make pickles, the vegetable substance should be first properly prepared or blanched. The vinegar should be of the best quality and in its purest state, and when the operation is finished, the preparation should be put in close vessels, and the air intirely excluded.

LIV.

Preserving.

Preserving is a mode of preparation chiefly applied to vegetables, particularly the fruits.

In order to execute it much boiling is necessary, so that the saccharine matter may be intimately and every where introduced into the pores of the vegetable substance.

By this process the volatile and active parts of the vegetable are for the most part lost, except where the vegetable contains a large proportion of fixed aromatic substance, as ginger. Hence preserves may be considered as nothing more than a mass of sugar. They are presented in two states,

either dry or wet. Where wet, the same attention is necessary to keep them closely covered from the access of external air as in pickles. The acid, acerb fruits are the chief subjects of this preparation.

LV.

Sauces and Seasoning.

The second intention of mixture in cookery, we mention to be to obviate the dryness of food, or increase its relish to the palate; both these purposes are answered by the use of seasoning and sauces.

Sauces consist either of oily matters, or strong gelatinous extracts from other meat, and these are rendered agreeable either by the admixture of other alimentary matters, or receive a poignancy by the addition of stimulents, as wine spirits and the various kinds of condiment.

All the condiments employed in sauces consists chiefly in three articles, salt, vinegar, and aromatics, variously mixed and modified according to the particular taste of the persons who use them. Some of these combinations are kept in particular forms ready for use; as the soy, ketchup, and corry.

In the choice of the sauce, butter is the oily basis most frequently preferred, and it is best suited to young meats where they are prepared by roasting, and also to fish, from the observations we formerly delivered, as well as to vegetables. Gelatinous extracts are best suited to meat of a firm and dense texture.

LVI.

The last intention with which mixture is employed in cookery, is to correct the noxious qualities of food. The propriety of this, and the manner of doing it, will be best understood by what has been detailed on particular articles of diet in the preceding work, and which will serve as a sufficient illustration of this head.

LVII.

On the whole, the subject of cookery has never been treated in a scientific form, and should this ever be done fully, the best arrangement made of it, perhaps, would be into three divisions, as applied first to the preservation of health, 2dly, to the counteracting disease, and 3dly, to the relish of the palate.

In treating it with the first view, the principles of nourishment and the proportion in which they exist in different substances, are the chief objects to be regarded in the choice of food; next to this a proper variety of it is to be selected in order prevent the preponderance of any particular state, so as to induce a deviation from health; and lastly, it is to be taken in the simplest and least stimulent form.

In treating the subject in order to counteract disease, that variety which is necessary for health must be laid aside. The food must be selected most suited to the morbid state, and a rigid ad-

herence to this one kind of food persevered in; the want of which perseverance is the cause of the failure of a milk diet, and many other kinds of regimen which have been prescribed.

In treating the subject with the last view, or its relish to the palate, it will belong more properly to the different professions of Italian and French origin and ingenuity, who exercise particular departments of this branch, than the physician. *Zest*, *poignancy*, and *stimulus*, or, in one word, the *agreeable*, is the only object in this part that falls to be studied; and this part is at present fully practised, though not scientifically treated.

GLOSSARY

OF TECHNICAL TERMS UNAVOIDABLY INTRODUCED
IN THIS WORK.

Athletic, strong, robust.

Alkalescency, tendency towards putrefaction,
or disposition towards this state.

Aphrodisiac, provoking to venery.

Aroma, the principle of vegetables in which
their smell resides.

Amylaceous, of or belonging to starch.

Alcohol, spirits.

Antiseptic, resisting putrefaction.

Azote, the base of the nitric acid, and the prin-
ciple of putrefaction.

Chyle, the nourishing liquor prepared from food.

Cholera Morbus, vomiting and looseness.

Cachectic, vitiated state of the fluids.

Carbonic acid, a composition of respirable air
and charcoal.

Cutaneous, belonging to the skin.

Condiment, seasoning.

Diarrhæa, looseness.

Deleterious, poisonous.

Decortication, taking off the husks of grain.

Diuretic.

- Diuretic*, exciting to urine.
- Excretion*, discharge, chiefly of a fluid nature.
- Efflorescence*, eruption.
- Essential Salt*, the saline substances held in solution in the juices of plants.
- Empyreumatic*, having the smell that proceeds from burnt oils.
- Esculent*, nourishing.
- Gastric fluid*, peculiar secretion of the stomach.
- Galinacious*, belonging to the hen.
- Homogeneous*, uniform.
- Heterogeneous*, the opposite of the former.
- Hydrogene*, the principle of water.
- Liguminous*, belonging to that specie of grain termed *pulse*, as pease, beans, &c.
- Mastication*, chewing food.
- Must*, the sweet or sugar part of wine.
- Nausea*, squeamishness of the stomach.
- Nitrogene*, the base of nitric acid.
- Narcotic*, sedative, or lulling sensibility.
- Oxygen*, the principle of acidity, also of vitality.
- Plethoric*, full, turgid, or over distended.
- Sphincter ani*, the under extremity or valve of the great gut.
- Saccharine*, belonging to sugar.
- Temperament*, peculiar constitution of body.
- Tartar*, incrustation which forms on the teeth.
- Tenesmus*, urgent and painful desire to go to stool.

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